SOIL SURVEY

Lee County Mississippi

Issued March 1973

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

Major fieldwork for this soil survey was done in the period 1960–67. Soil names and descriptions were approved in 1968. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1968. This survey was made cooperatively by the Soil Conservation Service and the Mississippi Agricultural Experiment Station. It is part of the technical assistance furnished to the Northeast Mississippi Soil Conservation District.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Lee County are shown on the detailed map at the back of this survey. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with numbers on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetical order by map symbol. It indicates the page where each kind of soil is described and also the name of the capability unit, woodland suitability group, and wildlife suitability group in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions.

Foresters and others can refer to the section "Use of Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Use of Soils for Wildlife."

Community planners and others can read about soil properties that affect the choice of sites for nonindustrial buildings and for recreation areas in the section "Town and Country Planning."

Engineers and builders can find, under "Use of Soils in Engineering," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers in Lee County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "General Nature of the County."

U.S. GOVERNMENT PRINTING OFFICE: 1973

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

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SOIL SURVEY OF LEE COUNTY, MISSISSIPPI

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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

LEE COUNTY is in the northeastern part of Mississippi (fig. 1) and is almost rectangular in shape. It is about 30 miles north to south and about 16 miles east to west; it has a land area of 455 square miles, or 291,200 acres.

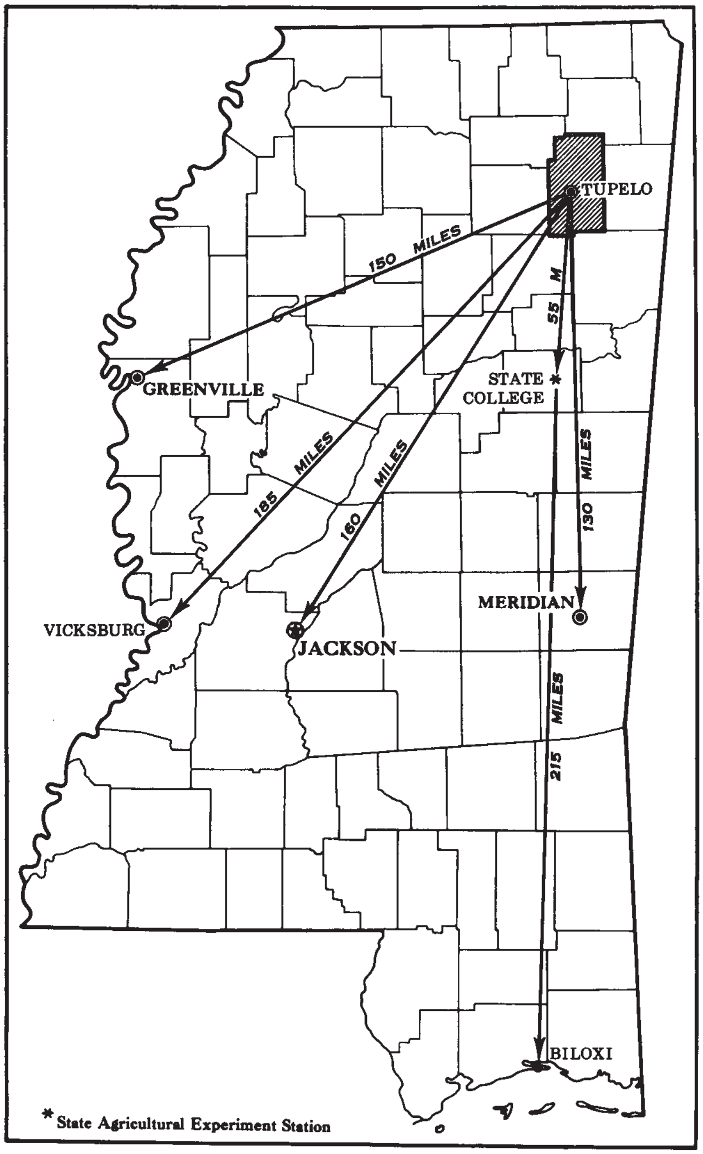

Figure 1.—**Location of Lee County in Mississippi.**

The county is in the Gulf Coastal Plain physiographic province. The surface of this plain is very hilly and broken in the northeastern part of the county and rolling, undulating, and nearly level in other parts. The western two-thirds of the county is drained by Town Creek and its tributaries and the eastern third by Twentymile Creek and Mantachie Creek and its tributaries.

Farming in Lee County consists mainly of growing soybeans, cotton, corn, and small grain and of raising dairy cattle, beef cattle, and poultry. Forest products are important as a source of income. Small- to medium-size industrial plants produce more income than farming. Many employees of industrial plants are also part-time farmers.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Lee County, where they are located, and how they can be used. The soil scientists went into the county knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures (*8*).[1] The soil series and the soil phase are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or

[1] Italic numbers in parentheses refer to Literature Cited, p. 71.

other geographic feature near the place where a soil of that series was first observed and mapped. Oktibbeha and Mantachie, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Ora fine sandy loam, 2 to 5 percent slopes, eroded, is one of several phases within the Ora series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. Two such kinds of mapping units shown on the soil map of Lee County are soil complexes and undifferentiated groups.

A soil complex consists of areas of two or more soils, so intermingled or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. The name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Gullied land-Demopolis complex, 5 to 20 percent slopes, is an example.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map may be made up of only one of the dominant soils, or of two or more. The name of an undifferentiated group consists of the names of the dominant soils, joined by "and." Cahaba and Ruston fine sandy loams, 17 to 30 percent slopes, is an example.

In most areas surveyed there are places where the soil material is so rocky, so shallow, or so severely eroded that it cannot be classified by soil series. These places are shown on the soil map and are described in the survey, but they are called land types and are given descriptive names. Gullied land is a land type in Lee County.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way as to be readily useful to different groups of users, among them farmers, managers of woodland, and engineers.

On the basis of yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. Then they adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under current methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Lee County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The soil associations in Lee County are discussed in the following pages.

Areas Dominated by Soils Subject to Flooding

Soil associations 1, 2, and 3 are on the flood plains throughout the county. The soils are nearly level and are somewhat poorly drained and moderately well drained. They are subject to flooding.

1. Leeper-Catalpa association

Somewhat poorly drained and moderately well drained, medium acid to moderately alkaline, nearly level soils that have a clayey subsoil; on flood plains

This association is on wide, fertile stream bottoms along Tubbalubba and Kings Creeks. It covers about 3 percent of the county.

Leeper soils make up about 40 percent of the association, and Catalpa soils, about 40 percent. The remain-

ing 20 percent is made up of Marietta and Tuscumbia soils.

The major soils of this association formed in clayey alkaline alluvium that washed from surrounding uplands. Leeper soils are somewhat poorly drained and are medium acid to moderately alkaline. They have a dark grayish-brown silty clay loam or fine sandy loam surface layer and a dark grayish-brown mottled silty clay subsoil. Catalpa soils are slightly acid to mildly alkaline. They have a very dark grayish-brown silty clay loam surface layer and a dark grayish-brown mottled silty clay subsoil. They are somewhat poorly drained to moderately well drained. Catalpa soils are near the uplands, and Leeper soils are along the stream channels.

Almost all of this association has been cleared and is in row crops and pasture. The city of Tupelo has many small- and medium-size industries. The farms in this association are about 100 acres in size. The dominant crops are soybeans and cotton. The soils are well suited to meet most cultivated crops and pasture plants.

This association is better suited to general farming than to other kinds of farming. The soils are poorly suited to most nonfarm uses, because of the flooding hazard and the unstable soil conditions.

2. Leeper-Marietta association

Somewhat poorly drained and moderately well drained, nearly level soils that have a clayey or loamy subsoil; on flood plains

This association is along major streams in the western part of the county and along Twentymile Creek in the northeastern part. It covers about 15 percent of the county.

Leeper soils make up about 40 percent of the association, and Marietta soils, about 30 percent. The remaining 30 percent is made up of Kinston, Mantachie, Catalpa, and Robinsonville soils.

The major soils of this association formed chiefly in clayey and loamy alluvium that washed from nearby uplands. Leeper soils are somewhat poorly drained and are medium acid to moderately alkaline. They have a dark grayish-brown silty clay loam or fine sandy loam surface layer and a mottled dark grayish-brown silty clay subsoil. Marietta soils are moderately well drained and are medium acid to mildly alkaline. They have a dark-brown surface layer and a mottled grayish and brownish, loamy subsoil.

Most of this association has been cleared and is in row crops and pasture. Flooding, often damaging, is common during the winter and spring, especially in areas at the lower end of Town Creek and its tributaries. Most of this association is within the Town Creek watershed, and when improvements are completed, the flooding will be controlled. Most of the farms in this area are about 100 to 200 acres in size and are primarily in soybeans and cotton.

With proper water management, these soils are suited to general farming. They are not suited to general building, parks, and similar uses, because of the flooding hazard and the unstable soil conditions.

3. Mantackie-Marietta association

Somewhat poorly drained and moderately well drained, nearly level soils that are loamy throughout; on flood plains

This association is along the major streams throughout the county on wide, nearly level flood plains. It covers about 6 percent of the county.

Mantachie soils make up about 70 percent of the association, and Marietta soils, about 15 percent. The remaining 15 percent is made up of Kinston, Arkabutla, and Una soils.

The major soils of this association formed in loamy alluvium that washed from adjacent upland soils. Mantachie soils are somewhat poorly drained and are strongly or very strongly acid. They have a dark grayish-brown fine sandy loam surface layer and a mottled grayish and brownish loam subsoil. Marietta soils are moderately well drained and are medium acid to mildly alkaline. They have a dark-brown loam surface layer and a mottled grayish and brownish, loamy subsoil.

Most of this association has been cleared and is in row crops and pasture. Flooding occurs during the winter and spring. Nearly all of this association is in the Town Creek watershed. When improvements are completed, the flooding will be controlled. Most of the farms in the area are about 100 acres in size and are primarily in soybeans and cotton.

This association is suited to general farming if proper water management is used. It is not suited to general building, parks, and other such uses, because of the flooding hazard and the high water table.

Areas Dominated by Unstable Clayey Soils Over Chalk

Associations 4 and 5 in the county are dominantly acid soils that have a clayey subsoil, soils that are shallow to chalk, and Gullied land.

4. Oktibbeha-Providence association

Moderately well drained and well drained soils that have a clayey or loamy subsoil; on uplands

This association occurs throughout the county. It consists of long, gently to moderately sloping ridgetops, about 1/8 to 1/4 mile wide, and side slopes that are moderately to strongly sloping and broken by numerous short drainageways and gullies. It covers about 18 percent of the county.

Oktibbeha soils make up about 40 percent of this association, and Providence soils, about 30 percent. The remaining 30 percent is made up of Commerce and Leeper soils on the narrow to moderately wide flood plains, Sumter soils on the steep, eroded side slopes, and Tippah soils on the smoother uplands.

Oktibbeha soils formed in beds of acid clay underlain by chalk. Providence soils formed in silty and loamy materials. Oktibbeha soils are on ridgetops and side slopes and are moderately well drained. They have a dark-brown silty clay loam or silty clay surface layer. The subsoil is yellowish-red mottled acid clay underlain by chalk. Providence soils generally occur on the ridgetops and are moderately well drained. They have a yellowish-

brown silt loam surface layer and a strong-brown silt loam subsoil that is underlain at a depth of about 18 inches by a thick, brittle fragipan.

About 75 percent of this association has been cleared. The upland areas are in pasture and woodland, and a small acreage is in row crops. The flood plains are in row crops and pasture. The wooded areas are generally in poor-quality hardwoods, but there are a few stands of loblolly and shortleaf pines. The farms in this area are about 100 to 150 acres in size. Most of the landowners derive a large part of their income from off-the-farm employment.

This association is suited to pasture and trees. Row crops should be confined to the flood plains. This area is only fairly well suited to general building, parks, roads, and other such uses, and care must be taken in their location. Providence soils are fairly well suited to this kind of use, but Oktibbeha soils are poorly suited. The use of Oktibbeha soils, which have a high shrink-swell potential, for these purposes results in very unstable foundations and poor trafficability.

5. Oktibbeha-Gullied land-Demopolis association

Moderately well drained to well drained, acid soils that have a clayey subsoil; calcareous Gullied land; and shallow soils between gullies

This association is in narrow bands on the southwestern side slopes in the western part of the county. The western part of Tupelo is within this association. The association consists of moderately sloping, dissected ridgetops and steep, gullied side slopes. It covers about 6 percent of the county.

Oktibbeha soils make up about 40 percent of the asso-percent. The remaining 30 percent is made up of other Demopolis soils on the moderate to steep side slopes and of Catalpa and Leeper soils on narrow stream bottoms. In the western part of Tupelo cut and filled areas of Urban land are included.

Oktibbeha soils formed in beds of acid clays underlain by chalk. They are moderately well drained and have a thin, brown silty clay surface layer and a mottled, yellowish-red acid clay subsoil underlain at a depth of about 2 to 3 feet by chalk. The areas of Gullied land and Demopolis soils consist of a network of gullies that formed in calcareous chalk. Within the gullied areas are small areas of Demopolis soils that have an olive-brown silty clay loam surface layer underlain at a depth of about 6 to 12 inches by firm chalk.

About half of this association is in pasture and hay, except for the area within the city limits of Tupelo. The rest is covered by poor-quality hardwoods, cedar, and Osage-orange. Many of the gullied areas are bare of vegetation.

This association is better suited to trees and pasture than to other crops. Row crops should be confined to the flood plains. Most of the association is undesirable for commercial and residential building, because of gullying, the heavy texture, and the instability for streets and building foundations.

The association is suitable for hunting, but most areas are poorly suited to parks, golf courses, and intensive play areas.

Areas Dominated by Soils That Have a Fragipan

Associations 6 and 7 consist dominantly of soils that have a fragipan. These soils formed in loamy acid materials, except for the Oktibbeha soils that formed in clayey materials and lack a fragipan.

6. Ora-Quitman-Oktibbeha association

Moderately well drained and somewhat poorly drained soils that have a fragipan and moderately well drained to well drained soils that have a clayey subsoil; on uplands

This association occurs in the area around Mooreville and in several areas in the western part of the county. It consists of long, gentle to moderate slopes on ridgetops that are about one-fourth mile wide and side slopes that are short and broken by numerous short drainageways and gullies. It covers about 6 percent of the county.

Ora soils make up about 40 percent of this association, Quitman soils, about 20 percent, and Oktibbeha soils, about 10 percent. The remaining 30 percent is made up of Tippah and Providence soils on the ridgetops, Demopolis and Sumter soils on the eroded side slopes, and Commerce soils on the narrow to moderately wide flood plains.

The Ora and Quitman soils formed in loamy, acid material. Oktibbeha soils formed in clay underlain by chalk. Ora soils are on the ridgetops and side slopes. They are moderately well drained. They have a dark-brown fine sandy loam surface layer and a yellowish-red sandy clay loam subsoil. They have a thick, brittle fragipan at a depth of about 19 inches. Quitman soils are on nearly level ridgetops. They are somewhat poorly drained and have a dark grayish-brown silt loam surface layer and a mottled light yellowish-brown silt loam subsoil. They have a fragipan at a depth of about 19 inches. Oktibbeha soils are on the side slopes in areas where the underlying chalk is near the surface. They are moderately well drained and have a thin, brown silty clay surface layer and a mottled, yellowish-red, acid clay subsoil. They are underlain by chalk at a depth of about 3 to 4 feet.

About two-thirds of this association has been cleared and is in pasture and row crops. The wooded areas are in poor quality hardwoods and stands of loblolly and shortleaf pines. The farms are about 100 acres in size. Most of the landowners derive a large part of their income from off-the-farm employment.

This association is better suited to general farming than to other kinds of farming. Most cultivated crops and pasture plants are suited to the soils. Pine timber is well suited. Except for the Oktibbeha soils, the association is fairly well suited to general building, parks, and other nonfarm uses. The Oktibbeha soils are poorly suited to these uses, because the high shrink-swell characteristics result in unstable foundations and poor trafficability.

7. Ora-Prentiss-Quitman association

Moderately well drained and somewhat poorly drained soils that have a fragipan; on broad upland flats

This association is widespread throughout the county. It consists of nearly level to gentle slopes on broad ridgetops and moderate side slopes that are broken by numerous short drainageways. It covers about 18 percent of the county.

Ora soils make up about 40 percent of this association, Prentiss soils, about 25 percent, and Quitman soils, about 10 percent. The remaining 25 percent is made up of Mantachie soils on narrow bottoms and Savannah and Mashulaville soils on nearly level uplands.

The major soils of this association formed in thick beds of loamy material. Ora soils are on the side slopes and on some ridges. They are moderately well drained and have a dark-brown fine sandy loam surface layer. Their subsoil is yellowish-red sandy clay loam. They have a thick, brittle fragipan at a depth of about 19 inches.

Prentiss soils occur on ridgetops and are moderately well drained. They have a yellowish-brown fine sandy loam surface layer and a yellowish-brown and brownish-yellow loam subsoil. They have a mottled fragipan at a depth of about 18 inches. Quitman soils occur on nearly level ridgetops and are somewhat poorly drained. They have a dark grayish-brown silt loam surface layer and a mottled light yellowish-brown silt loam subsoil. The depth to the fragipan is about 19 inches.

Most of this association has been cleared and is used for general farming. The farms are about 100 acres in size. Most of the landowners derive a large part of their income from off-the-farm employment.

This association is well suited to general farming. The soils are suited to most cultivated crops and pasture plants. Pine trees are well suited. Except for some level poorly drained areas, this association is fairly well suited to commercial and residential buildings, parks, and other recreational facilities. Surface water and a high water table are limitations in the poorly drained areas.

Areas Dominated by Deep, Well-Drained Soils

Association 8 consists of soils that formed in loamy and clayey, acid materials.

8. Cahaba-Luverne-Gullied land association

Well-drained soils that have a loamy or clayey subsoil and severely gullied land; on uplands

This association is widespread in the northeastern and east-central parts of the county. It consists of long, narrow ridgetops, which are about 1/8 to 1/4 mile wide, and steep side slopes that are broken by numerous short drainageways. The stream valleys are generally less than one-eighth of a mile wide. This association covers about 28 percent of the county.

Cahaba and Ruston soils make up about 35 percent of the association, Luverne soils, about 35 percent, and Gullied land, about 12 percent. The remaining 18 percent is made up of Ora soils on ridgetops and the loamy Mantachie and Kinston soils on narrow flood plains.

The major soils of this association formed in thick beds of loamy and clayey, acid material. Cahaba soils have a dark-brown fine sandy loam surface layer and a yellowish-red sandy clay loam or sandy loam subsoil. Luverne soils have a dark-brown fine sandy loam surface layer. The subsoil is yellowish-red sandy clay underlain by beds of stratified loamy and clayey material. Gullied land consists of severely gullied areas.

Most of this association is in pines and hardwood timber. The farms are about 100 acres in size. Most landowners derive a large part of their income from off-the-farm employment. Several private and public recreational lakes are in this association.

This association is better suited to woodland and pasture than to other crops. Row crops should be confined to the flood plains. The soils in this association are fairly well suited to residential and commercial development and to most kinds of recreational facilities. Gullied land is not suitable for these uses. The large wooded areas are well suited to wildlife.

Descriptions of the Soils

This section describes the soil series and mapping units of Lee County. The approximate acreage and proportionate extent of each mapping unit are given in table 1.

The soils of each series are first described as a group and important features common to all the soils of the series are listed. Each series description has a short narrative description of a representative profile and a much more detailed description of the same profile, from which highly technical interpretations can be made. Following the profile is a brief statement of the range of characteristics of the soils in the series, as mapped in this county. Comparisons are made with other soils that are nearby or are generally similar to the soils of the series being described.

Each single soil, or mapping unit, in the series is next described. Single soils are the areas delineated on the map and identified by soil symbols. Generally, these descriptions tell how the profile of the soil differs from that described as representative of the series. They also tell about the use and suitability of the soil described and briefly about management needs.

For full information about any one mapping unit, it is necessary to read the description of the soil series as well as the description of the mapping unit. General information about the broad patterns of soils in the county is given in the section "General Soil Map." The color names and color symbols given are for a moist soil, unless otherwise indicated.

Arkabutla Series

The Arkabutla series consists of somewhat poorly drained, strongly acid or very strongly acid soils of the flood plains. These soils formed in loamy alluvium.

In a representative profile, the surface layer is dark yellowish-brown loam in the upper 5 inches and dark-brown silty clay loam to a depth of about 8 inches. Below the surface layer is mottled yellowish-brown and gray silty clay loam to a depth of about 18 inches. Below

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent
Arkabutla loam	2, 012	0. 7
Cahaba and Ruston fine sandy loams, 5 to 8 percent slopes, eroded	1, 397	. 5
Cahaba and Ruston fine sandy loams, 12 to 17 percent slopes, eroded	5, 314	1. 8
Cahaba and Ruston fine sandy loams, 17 to 30 percent slopes	17, 551	6. 0
Catalpa silty clay loam	5, 221	1. 8
Commerce silt loam	9, 233	3. 2
Demopolis silty clay loam, 5 to 12 percent slopes, severely eroded	1, 763	. 6
Falkner silt loam, 0 to 2 percent slopes	851	. 3
Gullied land-Demopolis complex, 5 to 20 percent slopes	6, 262	2. 2
Gullied land–Ora complex, 5 to 20 percent slopes	10, 850	3. 7
Kinston fine sandy loam	7, 396	2. 5
Kipling silt loam, 0 to 2 percent slopes	677	. 2
Leeper fine sandy loam	6, 263	2. 1
Leeper silty clay loam	14, 715	5. 1
Luverne fine sandy loam, 5 to 8 percent slopes, eroded	4, 856	1. 7
Luverne fine sandy loam, 8 to 12 percent slopes, eroded	7, 673	2. 6
Luverne and Cahaba soils, 17 to 30 percent slopes	12, 494	4. 3
Luverne and Ruston soils, 12 to 17 percent slopes, eroded	11, 113	3. 8
Mantachie fine sandy loam	19, 443	6. 6
Marietta loam	16, 458	5. 7
Mashulaville fine sandy loam	2, 525	. 9
Mashulaville silt loam	3, 710	1. 3
Myatt fine sandy loam	1, 212	. 4
Oktibbeha silty clay loam, 2 to 5 percent slopes, eroded	6, 551	2. 2
Oktibbeha silty clay loam, 5 to 8 percent slopes, eroded	2, 909	1. 0
Oktibbeha silty clay, 2 to 5 percent slopes, severely eroded	2, 231	. 8
Oktibbeha silty clay, 5 to 12 percent slopes, severely eroded	13, 967	4. 8
Oktibbeha and Sumter soils, 8 to 17 percent slopes, severely eroded	11, 367	3. 9
Ora fine sandy loam, 2 to 5 percent slopes, eroded	7, 793	2. 7
Ora fine sandy loam, 5 to 8 percent slopes, eroded	13, 612	4. 7
Ora fine sandy loam, 8 to 12 percent slopes, severely eroded	7, 546	2. 6
Prentiss fine sandy loam, 0 to 2 percent slopes	4, 267	1. 5
Prentiss fine sandy loam, 2 to 5 percent slopes, eroded	8, 384	2. 8
Providence silt loam, 2 to 5 percent slopes	5, 549	1. 9
Providence silt loam, 2 to 5 percent slopes, eroded	3, 132	1. 1
Providence silt loam, 5 to 8 percent slopes, eroded	4, 365	1. 5
Providence silt loam, heavy substratum, 2 to 5 percent slopes, eroded	2, 931	1. 0
Providence silt loam, heavy substratum, 5 to 8 slopes, eroded	933	. 3
Quitman silt loam, 0 to 2 percent slopes	8, 648	3. 0
Robinsonville soils	2, 489	. 9
Savannah fine sandy loam, 0 to 2 percent slopes	944	. 3
Savannah fine sandy loam, 2 to 5 percent slopes	1, 536	. 5
Sumter silty clay, 5 to 12 percent slopes, eroded	933	. 3
Tippah silt loam, 0 to 2 percent slopes	535	. 2
Tippah silt loam, 2 to 5 percent slopes, eroded	3, 190	1. 1
Tippah silt loam, 5 to 8 percent slopes	1, 710	. 6
Tuscumbia silty clay loam	2, 346	. 8
Una silty clay	748	. 3
Urban land	1, 305	. 4
Water area	2, 300	. 8
Total	291, 200	100. 0

this, to a depth of 48 inches, is gray silty loam mottled with strong brown.

Representative profile of Arkabutla loam, in a soybean field, 2 miles east of Verona on the east side of Town Creek, NW¼NE¼ sec. 20, T. 10 S., R. 6 E.:

Ap1—0 to 5 inches, dark yellowish-brown (10YR 4/4) loam; weak, very fine, granular structure; very friable; common fine roots; strongly acid; abrupt, smooth boundary.

Ap2—5 to 8 inches, dark-brown (10YR 4/3) silty clay loam; moderate, medium, subangular blocky structure; firm; few fine roots; strongly acid; abrupt, smooth boundary.

B21—8 to 18 inches, mottled yellowish-brown (10YR 5/8) and gray (10YR 6/1) silty clay loam; moderate, fine and medium, subangular blocky structure; firm, plastic and sticky; few fine roots; few fine black concretions; very strongly acid; gradual, smooth boundary.

B22g—18 to 36 inches, gray (10YR 6/1) silty clay loam; many, coarse, distinct, strong-brown (7.5YR 5/8) mottles; moderate, fine and medium, subangular blocky structure; firm, plastic and sticky; few fine black concretions; very strongly acid; gradual, smooth boundary.

Cg—36 to 48 inches, gray (10YR 6/1) silty clay loam; many, coarse, distinct, strong-brown (7.5YR 5/8) mottles; massive; firm, plastic and sticky; few fine black concretions; very strongly acid.

The Ap horizon is grayish brown, dark yellowish brown, or brown to dark brown. It is dominantly loam, but it ranges to silty clay loam. The upper part of the B horizon is yellowish brown or brown mottled in shades of gray and brown, or it is mottled in shades of brown and gray. The lower part of the B horizon and the C horizon are gray mottled with shades of gray, brown, and yellow. The B and C horizons are silty clay loam or silt loam. At a depth of 10 to 40 inches the content of clay is 20 to 32 percent, and the content of fine and coarse sand is less than 15 percent. The soil is strongly acid or very strongly acid, except where the surface layer has been limed.

Arkabutla soils are associated with Leeper, Mantachie, and Marietta soils. They are more acid and less clayey in the B horizon than the Leeper soils. They differ from the Mantachie and Marietta soils in having less than 15 percent fine and coarse sand in the B horizon. Arkabutla soils also are more poorly drained and more acid throughout the solum than Marietta soils.

Arkabutla loam (Ar).—This is a somewhat poorly drained soil on flood plains. Slopes are 0 to 2 percent.

Included with this soil in mapping are small areas of Leeper, Mantachie, and Marietta soils.

This soil is strongly acid or very strongly acid. Permeability is moderate, and the available water capacity is very high. A plowpan forms in places, and this soil packs and crusts if left bare. Tilth can be maintained by the proper use of crop residue. Most areas of Arkabutla loam are subject to flooding for short periods.

Most of this soil is in row crops or pasture, and a small acreage is in woodland. Under good management, this

soil is suited to cotton, corn, soybeans, oats, common bermudagrass, bahiagrass, tall fescue, and white clover. Surface drainage, arrangement of crop rows, proper tillage, and adequate fertilization are needed. This soil can be used continuously for row crops. (Capability unit IIw–4; woodland suitability group 1w9; wildlife suitabilty group 2)

Cahaba Series

The Cahaba series consists of well-drained, strongly acid or very strongly acid soils. These soils formed in loamy materials. Slopes range from 5 to 30 percent.

In a representative profile, the surface layer is dark-brown fine sandy loam about 5 inches thick. The subsurface layer is yellowish-brown fine sandy loam about 4 inches thick. The upper part of the subsoil is yellowish-red sandy clay loam about 11 inches thick. The lower part is yellowish-red sandy loam about 12 inches thick. The substratum is yellowish-red sandy loam to a depth of 60 inches.

Representative profile of Cahaba fine sandy loam from an idle area of Cahaba and Ruston fine sandy loams, 17 to 30 percent slopes, 3.5 miles south of Saltillo, 15 feet east of a local road, 245 feet north of the southwest corner of SW¼SE¼ sec. 4, T. 9 S., R. 6 E.:

Ap—0 to 5 inches, dark-brown (10YR 4/2) fine sandy loam; weak, fine and medium, granular structure; very friable; common fine roots; strongly acid; clear, smooth boundary.

A2—5 to 9 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine, granular and subangular blocky structure; very friable; common fine roots; common fine worm casts; strongly acid; clear, wavy boundary.

B21t—9 to 20 inches, yellowish-red (5YR 4/6) sandy clay loam; moderate, fine and medium, subangular blocky structure; friable; few fine roots; patchy clay films on ped faces; very strongly acid; gradual, smooth boundary.

B22t—20 to 32 inches, yellowish-red (5YR 4/6) sandy loam; weak, fine and medium, subangular blocky structure; friable; sand grains coated and bridged with clay; few, medium, black splotches on ped faces; few medium pockets of sand; very strongly acid; diffuse, smooth boundary.

C—32 to 60 inches, yellowish-red (5YR 4/6) sandy loam; structureless; friable; common medium pockets of sand; very strongly acid.

The Ap horizon is grayish brown, dark grayish brown, dark brown, or yellowish brown. The A2 horizon is pale brown or yellowish brown. The Bt horizon is red or yellowish red and is loam, sandy loam, sandy clay loam, or clay loam. The clay content of the upper 20 inches of the Bt horizon ranges from 18 to 32 percent. The C horizon is yellowish red, reddish yellow, red, or strong brown. The texture is loam, sandy loam, or loamy sand. All horizons are strongly acid or very strongly acid.

The Cahaba soils are associated with Luverne, Ora, and Ruston soils. They are less clayey in the upper 20 inches of the B horizon than the Luverne soils. Cahaba soils lack the fragipan that is typical of the Ora soils. They have a thinner solum than the Ruston soils.

Cahaba and Ruston fine sandy loams, 5 to 8 percent slopes, eroded (CaC2).—This unit is on narrow ridgetops and short side slopes. The areas range from 20 to 40 acres in size.

The pattern and extent of Cahaba and Ruston soils are not uniform. Some areas are Cahaba fine sandy loam, some are Ruston fine sandy loam, and some areas contain both Cahaba and Ruston soils.

In most places the major soils make up about 90 percent of the acreage. About 55 percent of the unit is the Cahaba soil, and about 35 percent is the Ruston soil. Soils that have a thick loamy sand surface layer make up the rest.

The Cahaba soil is well drained and has a dark grayish-brown fine sandy loam surface layer about 7 inches thick. The subsoil is yellowish-red sandy clay loam to a depth of about 36 inches. The substratum is strong-brown sandy loam. It is strongly acid or very strongly acid throughout. The available water capacity is medium, and permeability is moderate. Runoff is medium.

The Ruston soil is well drained and has a brown fine sandy loam surface layer about 10 inches thick. The subsoil is yellowish-red sandy clay loam to a depth of about 60 inches. It is underlain by loamy sand or stratified layers of loam to sandy clay loam. It is strongly acid or very strongly acid. Available water capacity is medium, and permeability is moderate. Runoff is medium. Most of the areas have numerous rills and a few shallow gullies.

Practically all of this mapping unit is in pine and hardwood forest. It is suited to cultivation, but because of its accessibility and the small size of the areas, it is better suited to trees or pasture. The erosion hazard is moderate if these soils are cultivated. These soils are suited to cotton, corn, oats, soybeans, common bermudagrass, bahiagrass, tall fescue, common lespedeza, and white clover. Management needed to control erosion includes terraces, contour cultivation, and the use of close-growing crops in the cropping system. (Capability unit IIIe–3; woodland suitability group 3o1; wildlife suitability group 4)

Cahaba and Ruston fine sandy loams, 12 to 17 percent slopes, eroded (CaE2).—This unit is on eroded side slopes. The areas range from 40 to 80 acres in size, and in most places they are less than 500 feet in width. The pattern and extent of Cahaba and Ruston soils are not uniform. Some areas are Cahaba fine sandy loam, some are Ruston fine sandy loam, and some areas contain both Cahaba and Ruston soils.

In most places the major soils make up about 90 percent of the acreage. The Cahaba and Ruston soils occur in about equal proportion. Minor soils include areas of Luverne and Ora soils.

The Cahaba soil is well drained and has a yellowish-brown fine sandy loam surface layer about 3 inches thick. The subsoil is yellowish-red sandy clay loam. It is underlain, at a depth of about 40 inches, by yellowish-red sandy loam. It is strongly acid or very strongly acid throughout. The available water capacity is medium, and permeability is moderate. Runoff is rapid.

The Ruston soil is well drained and has a brown fine sandy loam surface layer about 3 inches thick. The subsoil is yellowish-red sandy clay loam. It is underlain, at depths below 60 inches, by stratified layers of loam to sandy clay loam. It is strongly acid or very strongly acid throughout. The available water capacity is medium, and permeability is moderate. Runoff is medium.

Practically all of this mapping unit is in pine and hardwood forest. Because of the steep slopes and severe erosion hazard, it is not suited to cultivation, but it is

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suited to trees and pasture. Bermudagrass, bahiagrass, sericea lespedeza, crimson clover, adapted hardwoods, and pine trees are suited. (Capability unit VIe-4; woodland suitability group 3o1; wildlife suitability group 5)

Cahaba and Ruston fine sandy loams, 17 to 30 percent slopes (CaF).—This unit is on rough, hilly uplands. The areas range from 40 to 300 acres in size. The pattern and extent of Cahaba and Ruston soils are not uniform. Some areas are Cahaba fine sandy loam, some are Ruston fine sandy loam, and some contain both Cahaba and Ruston soils.

In most places, the major soils make up about 64 percent of the acreage. About 36 percent of the unit is the Cahaba soil, about 28 percent is the Ruston soil. Minor soils include soils that have a thick loamy sand surface layer and areas of Mantachie and Kinston soils in narrow drainageways and at the head of drainageways. Also included are a few small eroded areas on strong slopes.

The Cahaba soil has the profile described as representative for the series. It is strongly acid or very strongly acid. The available water capacity is medium, and permeability is moderate. Runoff is rapid.

The Ruston soil is well drained and has a dark grayish-brown fine sandy loam surface layer about 7 inches thick. The subsoil is yellowish-red loam. It is underlain, at a depth below 60 inches, by mottled loamy sand or stratified layers of loam to sandy clay loam. The soil is strongly acid or very strongly acid. The available water capacity is medium, and permeability is moderate. Runoff is medium.

Practically all of this mapping unit is in pine and hardwood forest. Because of the very steep slopes and severe erosion, it is not suited to cultivated crops. It is better suited to trees and pasture. Bermudagrass, bahiagrass, crimson clover, sericea lespedeza, pine trees, and adapted hardwoods are suited. (Capability unit VIIe-1; woodland suitability group 3o1; wildlife suitability group 5)

Catalpa Series

The Catalpa series consists of dark colored, somewhat poorly drained to moderately well drained, slightly acid to mildly alkaline soils on flood plains. These soils formed in clayey alluvium.

In a representative profile, the surface layer is very dark grayish-brown silty clay loam to a depth of about 6 inches. The subsurface layer is very dark grayish-brown silty clay to a depth of about 20 inches. The upper part of the subsoil is dark grayish-brown silty clay to a depth of 27 inches. The lower part of the subsoil is mottled olive-brown and dark grayish-brown silty clay to a depth of 60 inches.

Representative profile of Catalpa silty clay loam in a cottonfield, 5 miles west of Shannon, 770 feet east and 100 feet north of the southwest corner of SW¼SW¼ sec. 17, T. 11 S., R. 5 E.:

Ap—0 to 6 inches, very dark grayish-brown (2.5Y 3/2) silty clay loam; moderate, fine and medium, granular structure; friable, plastic and sticky; few fine roots; calcareous; mildly alkaline; abrupt, smooth boundary.

A12—6 to 20 inches, very dark grayish-brown (2.5Y 3/2) silty clay; weak, coarse, prismatic structure parting to moderate, medium, subangular and angular blocky structure; firm, plastic and sticky; few fine charcoal pieces; few fine roots; calcareous; mildly alkaline; clear, wavy boundary.

B21—20 to 27 inches, dark grayish-brown (2.5Y 4/2) silty clay; common, fine, faint, olive-brown mottles; weak, coarse, prismatic structure breaking to moderate to strong, fine and medium, angular and subangular blocky structure; firm, very plastic and very sticky; few, fine, brown and black concretions; few fine lime nodules; calcareous; mildly alkaline; gradual, wavy boundary.

B22—27 to 41 inches, mottled olive-brown (2.5Y 4/4) and dark grayish-brown (2.5Y 4/2) silty clay; weak, coarse, prismatic structure parting to moderate, fine and medium, angular and subangular blocky structure; firm, very plastic and sticky; few, fine, black and brown concretions; few charcoal pieces; calcareous; mildly alkaline; gradual, wavy boundary.

B23—41 to 54 inches, mottled dark grayish-brown (2.5Y 4/2) and olive-brown (2.5Y 4/4) silty clay; moderate, medium, angular blocky structure; firm, very plastic and sticky; few, fine, brown and black concretions; few lime nodules; calcareous; mildly alkaline; gradual, wavy boundary.

B3—54 to 60 inches, mottled dark grayish-brown (2.5Y 4/2), olive-brown (2.5Y 4/4), and yellowish-brown (10YR 5/6) silty clay; weak to moderate, fine, angular blocky structure; firm, very plastic and sticky; few, fine, brown and black concretions; few medium lime nodules; calcareous; mildly alkaline.

The Ap and A1 horizons are very dark grayish brown to very dark brown and range from 16 to 21 inches in thickness. They are silty clay loam or silty clay. The upper part of the B horizon is dark grayish brown to olive brown, and the lower part either has similar colors or is mottled in shades of brown. This horizon is silty clay to clay. The clay content at a depth between 10 and 40 inches ranges from 40 to 50 percent. Shell particles are present in some profiles, and they range in size from 5 to 15 millimeters. Soft brown or black concretions or coats are present in most profiles. Reaction ranges from slightly acid to mildly alkaline.

Catalpa soils are associated with the Commerce, Leeper, Marietta, and Tuscumbia soils. They have a thicker and darker colored A horizon and a more clayey B horizon than the Commerce and Marietta soils. They have a thicker and darker colored A horizon than the Leeper and Tuscumbia soils, and they are better drained than the Tuscumbia soils.

Catalpa silty clay loam (Cp).—This soil is somewhat poorly drained to moderately well drained. Slopes range from 0 to 2 percent.

Included with this soil in mapping are small areas of Leeper soils and some areas of soils that have a surface layer of silty clay and clay.

This soil is slightly acid to mildly alkaline. Permeability is slow, and the available water capacity is high. Runoff is slow. Tilth is difficult to maintain but can be improved by proper use of crop residue (fig. 2). The depth of plowing should be varied to help prevent the formation of plowpans.

Almost all of this soil is in cultivation or in pasture. This soil is well suited to most row crops and pasture plants. Under good management, this soil can be used continuously for row crops. It is suited to cotton, corn, soybeans, oats, bermudagrass, bahiagrass, dallisgrass, tall fescue, johnsongrass, white clover, and hardwoods. Management needs are drainage, arrangement of crop rows, adequate fertilization, proper tillage, and return of crop residue to the soil. (Capability unit IIw-2; woodland suitability group 1w5; wildlife suitability group 1)

Figure 2.—**Crop residue on Catalpa silty clay loam.**

Commerce Series

The Commerce series consists of somewhat poorly drained, medium acid to mildly alkaline soils. These soils formed in loamy alluvial materials.

In a representative profile, the surface layer is dark-brown silt loam about 9 inches thick. The upper 9 inches of the subsoil is dark-brown silt loam mottled with light brownish gray and yellowish brown. The lower part of the subsoil, to a depth of 32 inches, is silty clay loam mottled in shades of gray and brown. The substratum, to a depth of 44 inches, is mottled light brownish-gray and yellowish-brown silty clay loam, and below this, to a depth of 60 inches, is gray silty clay loam.

Representative profile of Commerce silt loam, in a soybean field, 2.5 miles northeast of Nettleton, 575 feet north of blacktop and 98 feet east of field road, SW¼SW¼ sec. 21, T. 11 S., R. 7 E.:

Ap1—0 to 6 inches, dark-brown (10YR 4/3) silt loam; weak, fine, granular structure; very friable; common fine roots; mildly alkaline; abrupt, smooth boundary.

Ap2—6 to 9 inches, dark-brown (10YR 4/3) silt loam; few, fine, faint, yellowish-brown mottles; structureless; firm; few fine roots; this is a plowpan layer; mildly alkaline; abrupt, smooth boundary.

B21—9 to 18 inches, dark-brown (10YR 4/3) silt loam; common, medium, distinct, light brownish-gray (10YR 6/2) and yellowish-brown (10YR 5/8) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; few, fine, black splotches and worm casts; mildly alkaline; clear, smooth boundary.

B22—18 to 23 inches, mottled dark-brown (10YR 4/3), light brownish-gray (10YR 6/2), and yellowish-brown (10YR 5/4) silty clay loam; weak, medium, subangular blocky structure; friable, plastic and sticky; few fine roots; mildly alkaline; clear, smooth boundary.

B23g—23 to 32 inches, mottled very dark grayish-brown (10YR 3/2), yellowish-brown (10YR 5/4), and light brownish-gray (2.5Y 6/2) silty clay loam; weak, medium, subangular blocky structure; friable, plastic and sticky; few fine roots; mildly alkaline; gradual, smooth boundary.

C1g—32 to 44 inches, mottled light brownish-gray (2.5Y 6/2) and yellowish-brown (10YR 5/4) silty clay loam; massive; firm, plastic and sticky; few, fine, black concretions; mildly alkaline; gradual, smooth boundary.

C2g—44 to 60 inches, gray (10YR 5/1) silty clay loam; many, coarse, distinct, yellowish-brown (10YR 5/6) mottles; massive; firm, plastic and sticky; mildly alkaline.

The A horizon is brown, dark grayish brown, dark brown, or grayish brown. The B21 horizon is brown, dark brown, or yellowish brown and has gray mottles that range from few to many in number and fine to coarse in size. The B22, B23, and C horizons are mottled in shades of gray, brown, and yellow or have gray matrix colors. The B horizon is silt loam or silty clay loam. The clay content between depths of 10 and 40 inches ranges from 18 to 35 percent. Less than 15 percent of the soil material is coarser than very fine sand. Reaction ranges from medium acid to mildly alkaline. Black and brown concretions range from few to many.

The Commerce soils are associated with the Catalpa, Leeper, Mantachie, Marietta, Robinsonville, and Tuscumbia soils. They lack the thick dark A horizon that is typical of the Catalpa soils, and they have a less clayey B horizon. Commerce soils have a less clayey B horizon than the Leeper and Tuscumbia soils and are better drained than the Tuscumbia soils. They are more alkaline and have a more silty B horizon than the Mantachie and Marietta soils. Commerce soils are not so well drained as the Marietta and Robinsonville soils.

Commerce silt loam (Cr).—This soil is somewhat poorly drained. Slopes range from 0 to 2 percent.

Included with this soil in mapping are small areas of Leeper, Mantachie, and Marietta soils. Also included are a few small areas that have a silty clay loam surface layer.

This soil is medium acid to mildly alkaline. Permeability is moderately slow. The available water capacity is very high. Runoff is slow, and field drainage is needed to remove excess water. Tilth can be maintained by the proper use of crop residue. This soil tends to crust and pack if left bare. A plowpan may form in this soil.

Almost all of this soil is in row crops and pasture. Cotton, corn, soybeans, truck crops, small grain, bermudagrass, tall fescue, white clover, dallisgrass, and hardwoods are well suited to this soil. The management needs are drainage of the soil and arrangement of crop rows to remove excess water. Adequate fertilization, proper tillage, and return of crop residues are good management practices. This soil can be used continuously for row crops. (Capability unit IIw–3; woodland suitability group 1w5; wildlife suitability group 1)

Demopolis Series

The Demopolis series consists of well-drained, shallow, calcareous soils over chalk. These soils formed in loamy materials. Slopes range from 5 to 20 percent.

In a representative profile the surface layer is olive-brown silty clay loam about 6 inches thick. The next layer, about 5 inches thick, is mottled olive-brown and pale-yellow silty clay loam. Below this, to a depth of 44 inches, is chalk. It is pale yellow in the upper 4 inches and light gray in the lower 28 inches.

Representative profile of Demopolis silty clay loam, 5 to 12 percent slopes, severely eroded, one-fourth mile northwest of the Natchez Trace Parkway and Jackson Street overpass in Tupelo, NE¼SE¼SE¼ sec. 27, T. 9 S., R. 5 E.:

Ap—0 to 6 inches, olive-brown (2.5Y 4/4) silty clay loam; weak, fine, granular structure; friable; many fine roots; common, fine and medium lime concretions and shells; calcareous; moderately alkaline; clear, wavy boundary.

C—6 to 11 inches, mottled olive-brown (2.5Y 4/4) and pale-yellow (5Y 7/3) silty clay loam; moderate, fine and medium, subangular blocky structure; friable; common fine roots; about 50 percent fine and coarse platy lime fragments and shells; common worm casts; calcareous; moderately alkaline; clear, smooth boundary.

R1—11 to 16 inches, pale-yellow (5Y 7/3) soft chalk; common, medium, olive-yellow (2.5Y 6/8) streaks; strong, thin, platy structure; firm; calcareous; moderately alkaline; clear, smooth boundary.

R2—16 to 44 inches, light-gray (5Y 7/2) chalk; few, medium, distinct, olive-yellow (2.5Y 6/8) streaks; strong, thick, platy structure; very firm; calcareous.

The Ap horizon is olive brown, dark grayish brown, or grayish brown. The C horizon is distinctly mottled in shades of olive brown, yellow, or gray or has colors similar to the A horizon. The A horizon and C horizon are silty clay loam or silty clay and average less than 35 percent clay. The R horizon is gray or pale-yellow chalk. Depth to chalk ranges from 5 to 14 inches. Lime nodules and shells range from few to many and fine to coarse. Chalk fragments and shells range from 40 to 80 percent of the volume in the C horizon. Reaction ranges from mildly alkaline to moderately alkaline.

Demopolis soils are associated with the Sumter soils. They have a thinner solum than the Sumter soils.

Demopolis silty clay loam, 5 to 12 percent slopes, severely eroded (DeD3).—This is a well-drained, shallow, calcareous soil.

Included with this soil in mapping are small areas of Gullied land and Oktibbeha soils. Most areas have numerous rills, shallow gullies, and a few deep gullies. Also included are some areas where the depth to chalk is as much as 20 inches.

This soil is mildly alkaline to moderately alkaline, and it is calcareous. Permeability is slow, and the available water capacity is low. This soil is droughty because of the shallow root zone. Runoff is rapid, and the erosion hazard is severe.

Most of this soil is in pasture or in scrub woodland. Because of the severe erosion, the slope, and the depth, this soil should be in permanent vegetation. It is fairly well suited to pasture plants, such as bermudagrass, tall fescue, white clover, johnsongrass, and dallisgrass. (Capability unit VIe-2; woodland suitability group 4d3c; wildlife suitability group 6)

Falkner Series

The Falkner series consists of somewhat poorly drained, very strongly acid to strongly acid soils. These soils formed in loamy and clayey materials.

In a representative profile, the surface layer is dark yellowish-brown silt loam about 4 inches thick. The subsoil is brownish-yellow silty clay loam. It is mottled with light gray in the upper part and with light yellowish brown, light gray, and strong brown in the middle part. Between depths of 28 and 54 inches, it is light-gray silty clay mottled with strong brown.

Representative profile of Falkner silt loam, 0 to 2 percent slopes, 4 miles west of Shannon, 20 feet west and 20 feet north of the southeast corner of SW¼NW¼ sec. 21, T. 11 S., R. 5 E.:

Ap—0 to 4 inches, dark yellowish-brown (10YR 4/4) silt loam; many, fine, faint mottles of grayish brown and brown stains; weak, fine and medium, granular and subangular blocky structure; friable; common fine roots; few, fine, black concretions; very strongly acid; abrupt, smooth boundary.

B21t—4 to 8 inches, brownish-yellow (10YR 6/6) silty clay loam; common, fine, distinct mottles of light gray; weak, fine and medium, subangular blocky structure; friable; few fine roots, very strongly acid; clear, smooth boundary.

B22t—8 to 13 inches, mottled light yellowish-brown (10YR 6/4) and light-gray (10YR 7/2) silty clay loam; moderate, fine and medium, subangular blocky structure; friable, plastic and sticky; few, fine and medium roots; common clay films on peds; few, fine, hard, black concretions; very strongly acid; gradual, smooth boundary.

B23t—13 to 20 inches, mottled light-gray (10YR 7/2) and strong-brown (7.5YR 5/8) silty clay loam; moderate, fine to medium, angular and subangular blocky structure; friable, very plastic and sticky; few, fine and medium roots; clay films on peds; few, fine, red and black concretions; very strongly acid; gradual, smooth boundary.

B24tg—20 to 28 inches, light-gray (10YR 7/1) silty clay loam; many, coarse, distinct mottles of strong brown (7.5YR 5/); moderate, medium, subangular blocky structure; firm, very plastic and sticky; clay films or pressure faces on peds; few, fine, red concretions; strongly acid; diffuse, smooth boundary.

B25tg—28 to 54 inches, light-gray (10YR 7/1) silty clay; common, coarse, distinct mottles of strong brown (7.5YR 5/8); moderate, medium, subangular blocky structure; firm; clay films or pressure faces on peds; few, fine, black concretions; strongly acid.

The A horizon is brown, dark yellowish brown, or dark grayish brown. In some places, the upper part of the B horizon is yellowish brown, brownish yellow, or strong brown mottled with light gray, but in other places it is mottled in shades of gray, brown, and yellow. The light-gray mottles range from few to many in number. This horizon is silt loam to silty clay loam. The clay content of the upper 20 inches of the Bt horizon ranges from 25 to 33 percent. In some places, the lower part of the B horizon is light gray or gray, but in other places it is mottled in shades of brown, gray, red, and yellow. It is silty clay loam, silty clay, or clay. Red, brown, and black concretions range from few to common. Reaction is strongly acid to very strongly acid.

Falkner soils are associated with the Mashulaville, Myatt, Oktibbeha, and Tippah soils. They are not so poorly drained as Mashulaville soils, and they lack a fragipan. They contain more clay than the Mashulaville soils. They are more silty than the Myatt soils and have less gray in the upper part of the B horizon. The Falkner soils are less red and less clayey in the upper part of the B horizon than the Oktibbeha soils. They have more gray in the upper part of the horizon than the Tippah soils.

Falkner silt loam, 0 to 2 percent slopes (FaA).—This soil is somewhat poorly drained.

Included with this soil in mapping are small areas of Kipling, Mashulaville, and Myatt soils.

This soil is very strongly acid to strongly acid. Permeability is slow through the subsoil, and the available water capacity is very high. Runoff is slow. Tilth can be maintained by proper use of crop residue. This soil crusts and packs if left bare.

Most of this soil is in cultivation or in pasture, but the rest is in woodland. Cotton, corn, soybeans, oats, tall fescue, bermudagrass, common lespedeza, white clover, adapted hardwoods, and pine trees are suited to this soil. Excess surface water is a hazard. This water can be removed by arrangement of crop rows and drainage. Under good management, this soil can be used continuously for row crops. (Capability unit IIIw-2; woodland suitability group 2w8; wildlife suitability group 2)

Gullied Land

Gullied land consists of severely eroded areas in which a network of gullies has formed. Most of the gullies are 2 to 15 feet deep, but a few are deeper. The soil materials are loamy or chalk. Areas of this land type in the western part of the county are chalk, but the loamy areas occur throughout the county.

Gullied land-Demopolis complex, 5 to 20 percent slopes (GdE).—This complex is on uplands. The slopes are moderate to steep and are broken by numerous gullies and short drainageways. The small size of the areas occupied by the individual soils of the unit makes it impractical to map them separately.

Each area is about 62 percent Gullied land and about 17 percent Demopolis soils. The remaining 21 percent is made up of Oktibbeha, Sumter, and Catalpa soils, and an acid clayey soil that is underlain by chalk at a depth of less than 20 inches. The pattern of the soils is uniform.

The gullies are about 2 to 15 feet deep and about 25 to 100 feet wide. The soil material is calcareous marl and chalk. Slopes range from about 5 to 20 percent. Runoff is very rapid, and erosion is active in unprotected areas. In many areas, these gullies have been partly overgrown with cedar, black locust, and Osage-orange.

Areas of Demopolis soils occur between the gullies and are 15 to 50 feet wide (fig. 3), but in some gullied areas they occur as circular islands 25 to 75 feet wide. The surface layer is olive-brown silty clay loam about 6 inches thick. The subsoil is mixed pale-olive silty clay loam and light-gray chalk about 6 inches thick. Chalk is at a depth of about 12 inches.

Demopolis soils are calcareous and mildly alkaline to moderately alkaline. Permeability is slow, and the available water capacity is low. Runoff is rapid. These soils erode rapidly if left bare.

Many of the gullies are bare of vegetation, and the areas between the gullies are covered with poor-quality pasture grasses and scrub hardwoods. Because of severe erosion, these soils should be maintained in permanent vegetation. (Capability unit VIIe-3; not in a woodland suitability group; wildlife suitability group 6)

Gullied land-Ora complex, 5 to 20 percent slopes (GoE).—This mapping unit represents a complex of Gullied land and Ora soils. This complex is on narrow ridgetops and choppy side slopes. The small size of the areas occupied by individual soils of the unit makes it impractical to map them separately.

Each area is about 67 percent Gullied land and about 25 percent Ora soils. The rest is made up of Cahaba, Ruston, and Luverne soils. The pattern and extent of the soils in the unit are uniform. Each area has Gullied land and Ora soils (fig. 4).

The gullies occur throughout the area and are 10 to 150 feet wide and 2 to 8 feet deep. In most of the gullied area, erosion has removed the surface layer and subsoil and part of the underlying material. These areas have a sparse cover of grasses and trees.

Ora soils are between the areas of Gullied land. The surface layer is brown fine sandy loam about 1 inch thick. The subsoil is a yellowish-red loam that is underlain by a mottled yellowish-red, brown, and gray fragipan layer at a depth of about 18 inches.

Ora soils are very strongly acid to strongly acid, and the available water capacity is medium. Permeability is moderately slow, and runoff is rapid.

A large part of this mapping unit is idle. Some areas have been planted to pine trees, but trees are generally difficult to establish because of poor tilth and low moisture supply. Because of the severe erosion, these soils should be in permanent vegetation. (Capability unit VIIe-2; not in a woodland suitability group; wildlife suitability group 6)

Kinston Series

The Kinston series consists of poorly drained, very strongly acid to strongly acid soils. These soils formed in loamy alluvial materials.

In a representative profile, the surface layer is dark-brown fine sandy loam about 7 inches thick. The subsoil, to a depth of 36 inches, is gray mottled with yellowish brown. It is sandy clay loam in the upper part and loam in the lower part. The substratum, to a depth of

Figure 3.—Cedars growing on Gullied land-Demopolis complex, 5 to 20 percent slopes.

Figure 4.—An area of Gullied land-Ora complex, 5 to 20 percent slopes.

42 inches, is gray sandy loam mottled with dark yellowish brown.

Representative profile of Kinston fine sandy loam, in a soybean field, 1 mile east of U.S. Highway No. 45, 120 feet east of field ditch, SE¼SW¼NE¼ sec. 8, T. 9 S., R. 6 E.:

Ap—0 to 7 inches, dark-brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, smooth boundary.

B2g—7 to 14 inches, gray (10YR 6/1) sandy clay loam; many, medium, distinct, yellowish-brown (10YR 5/8) mottles; weak, fine and medium, subangular blocky structure; friable; common fine roots; very strongly acid; gradual, smooth boundary.

B3g—14 to 36 inches, gray (10YR 6/1) loam; many, medium, distinct, yellowish-brown mottles; massive to weak, fine, subangular blocky structure; friable; few fine roots; common, fine, black concretions and splotches; very strongly acid; gradual, smooth boundary.

Cg—36 to 42 inches, gray (10YR 6/1) sandy loam; many, coarse, distinct, dark yellowish-brown (10YR 4/4) mottles; massive; friable; common, fine, black concretions and splotches; very strongly acid.

The Ap horizon is brown, dark brown, or dark grayish brown. The B and C horizons are light gray to light brownish gray and have few to many yellowish-brown to dark yellowish-brown mottles. The B horizon is loam, sandy clay loam, or clay loam. Clay makes up 20 to 30 percent and sand coarser than very fine sand makes up more than 15 percent of the soil material at depths between 10 and 40 inches. Black and brown concretions range from few to many in the lower part of the B horizon and in the C horizon. Reaction ranges from strongly acid to very strongly acid.

Kinston soils are associated with the Mantachie, Marietta, and Una soils. They are not so well drained as the Mantachie soils and Marietta soils and are more strongly acid than the Marietta soils, which are medium acid to mildly alkaline. They have a less clayey B horizon than the Una soils.

Kinston fine sandy loam (Kn).—This is a poorly drained soil on flood plains. Slopes range from 0 to 2 percent.

Included with this soil in mapping are small areas of Mantachie and Una soils. Also included are some areas of soil that has received recent overwash of brownish-yellow loamy sand. These areas occur where there is recent accelerated erosion in the drainageways.

This soil is strongly acid to very strongly acid. Permeability is moderate, and the available water capacity is medium. Runoff is slow, and drainage is necessary in order to remove excess water. This soil floods regularly during winter and spring, and damage to crops is usually severe. Tilth can be maintained by proper use of crop residue, but the soil tends to crust and pack if left bare. A plowpan may form.

Most of this soil is in bottom-land hardwoods, and the rest is in row crops and pasture. This soil is better suited to adapted hardwoods, pines, soybeans, and pasture plants than to other crops. (Capability unit IVw-1; woodland suitability group 2w9; wildlife suitability group 2)

Kipling Series

The Kipling series consists of somewhat poorly drained, very strongly acid or extremely acid soils. These soils formed in clayey materials over marly clays. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark-brown silt loam about 3 inches thick. The upper 5 inches of the subsoil is strong-brown silty clay mottled with yellowish red and light yellowish brown. The lower 20 inches of the subsoil is mottled in shades of brown, gray, and red. The subsoil is silty clay in the upper 11 inches and clay in the lower part. The substratum is gray clay mottled with yellowish brown.

Representative profile of Kipling silt loam, 0 to 2 percent slopes, in a pasture, 4 miles southwest of Shannon, SW¼NE¼ sec. 28, T. 11 S., R. 5 E.:

Ap—0 to 3 inches, dark-brown (10YR 4/3) silt loam; weak, fine and medium, granular structure; friable; many fine roots; very strongly acid; abrupt, smooth boundary.

B21t—3 to 8 inches, strong-brown (7.5YR 5/8) silty clay; many, fine, distinct mottles of yellowish red and light yellowish brown; moderate, fine and medium, subangular blocky structure; friable, very plastic and sticky; common fine roots; few, fine, soft, black concretions; very strongly acid; clear, smooth boundary.

B22t—8 to 14 inches, mottled strong-brown (7.5YR 5/8), light yellowish-brown (2.5Y 6/4), and yellowish-red (5YR 5/8) silty clay; moderate, fine and medium, subangular blocky structure that breaks down to moderate, very fine, angular blocky; firm, very plastic and sticky; few fine roots; few, fine, soft, black concretions; very strongly acid; clear, smooth boundary.

B23t—14 to 21 inches, mottled red (10R 4/8), strong-brown (7.5YR 5/8), and gray (10YR 6/1) clay; moderate, fine, angular blocky structure; firm, very plastic and sticky; few fine roots; extremely acid; gradual, smooth boundary.

B3t—21 to 28 inches, mottled gray (10YR 6/1), strong-brown (7.5YR 5/8), and red (10R 4/8) clay; weak, fine, angular blocky structure; firm, very plastic and sticky; few, fine, black concretions; very strongly acid; gradual, smooth boundary.

C1g—28 to 48 inches, gray (10YR 6/1) clay; many, fine to coarse, distinct mottles of yellowish brown; massive; few small slickensides; firm, very plastic and sticky; strongly acid; diffuse, smooth boundary.

C2g—48 to 60 inches, mottled gray (10YR 6/1) and yellowish-brown (10YR 5/8) clay; massive; few small slickensides; firm, very plastic and sticky; strongly acid.

The Ap horizon is brown, dark brown, or dark yellowish brown. The upper 5 inches of the B horizon is yellowish brown to strong brown mottled in shades of gray and red. The lower part of the B horizon is mottled in shades of brown, red, and gray. The B horizon is silty clay or clay, and the clay content of the upper 20 inches of the B horizon ranges from 35 to 50 percent. The C horizon is a gray silty clay or clay. Depth to marl or soft chalk ranges from 3 to 8 feet. Reaction of the A horizon and B horizon is very strongly acid to extremely acid. The C horizon is strongly acid to slightly acid.

Kipling soils are associated with the Oktibbeha and Tippah soils. They are not so red in the upper part of the B horizon as the Oktibbeha soils. They are more clayey in the upper part of the B horizon than the Tippah soils.

Kipling silt loam, 0 to 2 percent slopes (KpA).—This is a somewhat poorly drained soil that has high shrink-swell potential.

Included with this soil in mapping are small areas of Tippah soils.

This soil is extremely acid or very strongly acid in the subsoil and strongly acid to slightly acid in the C horizon. It shrinks when dry and forms cracks. Permeability is very slow to slow, and the available water capacity is high. Runoff is slow, and the erosion hazard is slight if this soil is in cultivation. Tilth can be improved by the proper use of crop residue.

The use of this soil is about equally divided between row crops and pasture. Soybeans, most pasture plants, small grains, and pine trees are suited. Management needs include drainage, arrangement of crop rows, and return of crop residue to the soil. (Capability unit IIw–5; woodland suitability group 2c8; wildlife suitability group 3)

Leeper Series

The Leeper series consists of somewhat poorly drained, medium acid to moderately alkaline soils. These soils formed in clayey alluvium.

In a representative profile, the surface layer is dark grayish-brown silty clay loam in the upper 4 inches and dark grayish-brown silty clay in the lower 4 inches. The subsoil, to a depth of about 34 inches, is dark grayish-brown silty clay mottled with very dark grayish brown. The substratum, to a depth of about 50 inches, is mottled gray and yellowish-brown clay.

Representative profile of Leeper silty clay loam, in a soybean field, 270 feet south of the Coonewah Canal, along the local road south of the Brewer Community, SW¼SW¼ sec. 16, T. 11 S., R. 6 E.:

Ap1—0 to 4 inches, dark grayish-brown (10YR 4/2) silty clay loam; moderate, fine and medium, granular structure; friable, plastic and sticky; few fine roots, moderately alkaline; abrupt, smooth boundary.

Ap2—4 to 8 inches, dark grayish-brown (10YR 4/2) silty clay; massive; firm, very plastic and sticky; few fine roots; moderately alkaline; clear, smooth boundary.

B21—8 to 34 inches, dark grayish-brown (10YR 4/2) silty clay; common, fine, faint, very dark grayish-brown mottles; moderate, fine and medium, subangular blocky structure; firm, very plastic and very sticky; few fine roots; moderately alkaline; clear, wavy boundary.

Cg—34 to 50 inches, mottled gray (5Y 5/1) and yellowish-brown (10YR 5/8) clay; massive; firm, very plastic and very sticky; few fine roots; pressure faces on some peds; few slickensides that do not intersect; common, fine, brown and black, soft concretions; moderately alkaline.

The Ap horizon is dark gray or dark grayish brown. The A horizon is silty clay, silty clay loam, or fine sandy loam. The B horizon is dark grayish brown or grayish brown and mottled. In places the C horizon is dark gray to gray and has few to many mottles of reddish brown to yellowish brown instead of mottled gray and yellowish brown. The B and C horizons are clay, silty clay, or silty clay loam. The clay content is 35 to 50 percent between depths of 10 and 40 inches. Reaction ranges from medium acid to moderately alkaline. Black and brown concretions range from none to many.

Leeper soils are associated with the Arkabutla, Catalpa, Commerce, Marietta, Robinsonville, and Tuscumbia soils. They have a more alkaline, more clayey B horizon than the Arkabutla soils. They are not so well drained as Catalpa soils, and they lack the thick dark-colored surface layer that is typical of those soils. Leeper soils have a more clayey B horizon than the Commerce, Marietta, and Robinsonville soils. They are not so well drained as the Marietta and Robinsonville soils. They are better drained than the Tuscumbia soils.

Leeper fine sandy loam (Le).—This is a somewhat poorly drained clayey soil that has a fine sandy loam surface layer. This soil is on flood plains. Slopes range from 0 to 2 percent.

The surface layer is dark grayish-brown fine sandy loam about 6 inches thick. The subsoil is dark grayish-brown silty clay mottled in shades of brown and red. The substratum is gray clay.

Included with this soil in mapping are small areas of Commerce, Marietta, and Robinsonville soils.

This soil is medium acid to moderately alkaline. Permeability is very slow. This soil shrinks and cracks when dry, and the available water capacity is high. Runoff is slow. Most areas flood during winter and spring, and drainage systems are needed to remove excess water. Tilth can be maintained by the proper use of crop residue, but the soil crusts and packs if left bare. A plowpan may form in this soil.

Most of this soil is in cultivation or in pasture. A small acreage is in bottom-land hardwoods. Cotton, corn, small grain, soybeans, bermudagrass, dallisgrass, johnsongrass, tall fescue, white clover, and adapted hardwoods are well suited to this soil. Management needs include drainage, arrangement of crop rows, adequate fertilization, proper tillage, and return of crop residue to the soil. This soil can be used continuously for row crops. (Capability unit IIw–2; woodland suitability group 1w6; wildlife suitability group 1)

Leeper silty clay loam (Lp).—This is a somewhat poorly drained soil on flood plains. Slopes range from 0 to 2 percent. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Catalpa, Commerce, Marietta, and Tuscumbia soils. Also included are a few small areas that have a fine sandy loam or loam surface.

This soil is medium acid to moderately alkaline. Permeability is very slow, and this soil shrinks and cracks when dry. The available water capacity is high. Runoff is slow. Most areas of this soil flood during winter and spring, and drainage systems are needed to remove excess water. Tilth can be improved by the proper use of crop residue but this soil crusts and packs if left bare. A plowpan may form in this soil.

Most of this soil is in cultivation or in pasture. A small acreage is in bottom-land hardwoods. Cotton corn, soybeans, small grains, bermudagrass, dallisgrass, johnsongrass, tall fescue, white clover, and adapted hardwoods are well suited to this soil. Management needs include drainage, arrangement of crop rows (fig. 5),

Figure 5.—**Row arrangement of soybeans on Leeper silty clay loam.**

adequate fertilization, proper tillage, and return of crop residue to the soil. This soil can be used continuously for row crops. (Capability unit IIw-2; woodland suitability group 1w6; wildlife suitability group 1)

Luverne Series

The Luverne series consists of well-drained, very strongly acid to strongly acid upland soils. These soils formed in clayey material underlain by stratified loamy material. Slopes range from 5 to 30 percent.

In a representative profile, the surface layer is dark-brown fine sandy loam about 3 inches thick. The subsurface layer is yellowish-brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 26 inches, is yellowish red. It is sandy clay in the upper 13 inches, clay loam in the middle, and below this, to a depth of 37 inches, mottled yellowish-red, pale-brown, red, or light brownish-gray sandy clay loam. The lower part is light brownish-gray clay loam. The substratum, at a depth of 43 inches, is light brownish-gray, mottled clay loam.

Representative profile of Luverne fine sandy loam, in a wooded area of Luverne and Cahaba soils, 17 to 30 percent slopes, 6 miles northwest of Tupelo on the west side of Lake Piomingo, NE¼NW¼SE¼ sec. 2, T. 9 S., R. 6 E.:

A1—0 to 3 inches, dark-brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

A2—3 to 7 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine and medium, granular and subangular blocky structure; friable; many fine roots; strongly acid; clear, wavy boundary.

B21t—7 to 20 inches, yellowish-red (5YR 4/6) sandy clay; moderate to strong, fine and medium, subangular blocky structure; firm; many fine roots; continuous clay films on ped faces; very strongly acid; clear, wavy boundary.

B22t—20 to 26 inches, yellowish-red (5YR 4/6) clay loam; common, medium, distinct, pale-brown (10YR 6/3) and red (2.5YR 4/6) mottles; moderate, fine and medium, subangular blocky structure; firm; common fine roots; continuous clay films on ped faces; very strongly acid; clear, wavy boundary.

B23t—26 to 30 inches, mottled yellowish-red (5YR 4/6), pale-brown (10YR 6/3), and red (2.5YR 4/6) sandy clay loam; moderate, fine and medium, subangular blocky structure; friable; common fine roots; patchy clay films; few gray shaly fragments; very strongly acid; gradual, smooth boundary.

B24t—30 to 37 inches, mottled yellowish-red (5YR 4/6), pale-brown (10YR 6/3), red (2.5YR 4/6), and light brownish-gray (2.5Y 6/2) sandy clay loam; moderate, fine and medium, subangular blocky structure; friable; common fine roots; patchy clay films; few fine mica flakes; very strongly acid; gradual, wavy boundary.

B3—37 to 43 inches, light brownish-gray (2.5Y 6/2) clay loam; common, medium, distinct, yellowish-brown (10YR 5/8), yellowish-red (5YR 4/6), red (2.5YR 4/6), and pale-brown (10YR 6/3) mottles; weak, medium, subangular blocky structure; friable; very strongly acid; few fine mica flakes; clear, wavy boundary.

C1—43 to 50 inches, light brownish-gray (2.5Y 6/2) clay loam; common, medium, distinct, yellowish-brown (10YR 5/8), yellowish-red (5YR 4/6), red (2.5YR 4/6), and pale-brown (10YR 6/3) mottles; massive but appears to be stratified; friable; few fine mica flakes; very strongly acid; gradual, wavy boundary.

C2—50 to 60 inches, light brownish-gray (2.5Y 6/2) sandy clay loam; many coarse, distinct, strong-brown (7.5YR 5/6) mottles; common fine strata of shale; massive; friable; few fine mica flakes; feldspar "ghosts"; very strongly acid.

The Ap and A2 horizons are brown, grayish brown, dark grayish brown, or yellowish brown. The A1 horizon, where present, is dark brown, very dark grayish brown, or very dark brown and generally less than 6 inches thick. The upper part of the Bt horizon is red to yellowish red. The lower part of the Bt horizon is distinctly to prominently mottled in shades of yellow, brown, red, and gray. The upper 20 inches of the Bt horizon is clay loam, sandy clay, and clay. The clay content ranges from 35 to 50 percent but is ordinarily about 40 percent. The C horizon has matrix colors of gray, brown, red, or is mottled in shades of gray, brown, or red. The C horizon is generally stratified loam, sandy clay loam, clay loam, sand clay, and shale. Mica flakes and feldspar ghosts are common in some profiles. Few to common sandstone rocks about 1 inch in diameter are in some profiles. Reaction is strongly acid to very strongly acid.

Luverne soils are associated with the Cahaba and Ruston soils. They have a B horizon that is more clayey in the upper 20 inches than the one in the Cahaba and Ruston soils.

Luverne fine sandy loam, 5 to 8 percent slopes, eroded (LrC2).—This is a well-drained soil that occurs mainly on ridgetops. It has a brown fine sandy loam surface layer about 3 inches thick. Rills and a few shallow gullies are common. The upper part of the subsoil is red clay about 26 inches thick. The lower part is yellowish-red clay loam about 11 inches thick. The substratum consists of layers of clay loam, loam, and shale.

Included with this soil in mapping are small areas of Cahaba, Ruston, and Tippah soils.

This soil is very strongly acid to strongly acid, and the available water capacity is high. Permeability is moderately slow, and runoff is medium. Tilth can be maintained by the proper use of crop residue.

Practically all of this soil is in woodland, but a small acreage is in pasture. This soil is better suited to pasture plants and trees than to other crops. Cotton, corn, oats, soybeans, common bermudagrass, bahiagrass, tall fescue, common lespedeza, and white clover are also suited to this soil. Among the effective management practices needed to control erosion are terraces, contour cultivation, and use of close-growing crops in the cropping system. (Capability unit IIIe-3; woodland suitability group 3c2; wildlife suitability group 4)

Luverne fine sandy loam, 8 to 12 percent slopes, eroded (LrD2).—This well-drained soil is on side slopes. It has a yellowish-brown fine sandy loam surface layer about 3 inches thick. Rills and a few shallow gullies are common. The upper part of the subsoil is red clay about 16 inches thick. The lower part is yellowish-red clay loam about 23 inches thick. The substratum consists of layers of loam, sandy clay loam, and shale.

Included with this soil in mapping are small areas of Oktibbeha and Ruston soils.

This soil is strongly acid to very strongly acid, and the available water capacity is high. Permeability in the subsoil is moderately slow, and runoff is rapid.

Practically all of this soil is in hardwood forest. This soil is suited to most pasture plants and trees. (Capability unit IVe-1; woodland suitability group 3c2; wildlife suitability group 4)

Luverne and Cahaba soils, 17 to 30 percent slopes (LuF).—These soils are on rough hilly uplands. They are on narrow winding ridgetops and very steep side slopes that

are broken by numerous short drainageways. In some places the difference in elevation from the valley floor to the adjacent ridgetop is as much as 100 feet. The areas range from 60 to 500 acres in size.

The pattern and the extent of the Luverne and the Cahaba soils are not uniform throughout all areas. Some areas are Luverne fine sandy loam, some are Cahaba fine sandy loam, and some areas contain both Luverne and Cahaba soils.

In most places the major soils make up about 86 percent of the acreage. Luverne soils make up about 64 percent, and Cahaba soils make up about 22 percent. Minor soils that make up the rest are the Ruston and Ora soils and a soil that has a thick loamy sand surface layer, all of which are on uplands, and the Mantachie and Kinston soils, both of which are in narrow drainageways and heads of drainageways. Also included are a few eroded areas that were once in cultivation.

The well-drained Luverne soil occurs mainly on the middle and upper slopes and, in some places, on the ridgetops. The profile of this soil is similar to that described as representative for the series. This soil is strongly or very strongly acid. Available water capacity is high, and permeability is moderately slow. Runoff is rapid.

The well-drained Cahaba soil occurs throughout the landscape. The surface layer is dark grayish-brown fine sandy loam about 3 inches thick. The subsoil is yellowish-red sandy clay loam. It is underlain at a depth of about 43 inches by strong-brown sandy loam. This soil is strongly acid or very strongly acid. Available water capacity is medium, and permeability is moderate. Runoff is rapid.

Practically all of the acreage is in pine and hardwood forest. Because of the slope and the erosion hazard, these soils are not suited to cultivation. They are suited to trees and pasture. The erosion hazard is very severe. Bermudagrass, bahiagrass, sericea, lespedeza, crimson clover, adapted hardwoods, and pine trees are suited. (Capability unit VIIe-1; Luverne part in woodland suitability group 3c2, Cahaba part in woodland suitability group 3o1; wildlife suitability group 5)

Luverne and Ruston soils, 12 to 17 percent slopes, eroded (LvE2).—This unit consists of eroded soils on short side slopes. The areas are from 10 to 150 acres in size.

The pattern and extent of Luverne and Ruston soils are not uniform throughout all areas. Some areas are Luverne fine sandy loam, some are Ruston fine sandy loam, and some areas contain both Luverne and Ruston soils.

In most places the major soils make up about 90 percent of the acreage. About 79 percent of the unit is Luverne soil, about 11 percent of the unit is Ruston soil. Minor soils are Mantachie and Kinston soils, which are in narrow drainageways and the head of drainageways, make up the rest.

Included in mapping are a few areas of Gullied land and a few areas of severely eroded soils. In most of these areas the surface layer is a mixture of the original surface layer and part of the subsoil. Also included are rills and shallow gullies.

The surface layer of the Luverne soil is yellowish-brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 44 inches, is yellowish-red clay. The substratum consists of layers of loam, sandy clay loam, sandy clay, and shale. This soil is strongly acid or very strongly acid. Available water capacity is high, and permeability in the subsoil is moderately slow. Runoff is rapid.

The Ruston soil is well drained. It has a yellowish-brown fine sandy loam surface layer about 4 inches thick. The subsoil is yellowish-red sandy clay loam to a depth of more than 60 inches. This soil is very strongly acid to strongly acid. Available water capacity is medium, and permeability is moderate. Runoff is rapid.

Because of the slope and the erosion hazard, these soils are not suitable for cultivation. They are suited to trees and pasture. Bermudagrass, bahiagrass, sericea lespedeza, and crimson clover are suitable pasture grasses. (Capability unit VIe-4; Luverne part in woodland suitability group 3c2, Ruston part in woodland suitability group 3o1; wildlife suitability group 5)

Mantachie Series

The Mantachie series consists of somewhat poorly drained, nearly level, very strongly acid to strongly acid soils on flood plains. These soils formed in loamy alluvium.

In a representative profile the surface layer consists of fine sandy loam that is dark grayish brown in the upper 5 inches and mottled brown, grayish brown, and light yellowish brown in the lower 6 inches. The upper part of the subsoil, to a depth of 19 inches, is mottled brown, strong brown, dark yellowish-brown, grayish-brown, or gray loam. The lower part of the subsoil is gray loam mottled with strong brown and yellowish red to a depth of 61 inches.

Representative profile of Mantachie fine sandy loam, in a pasture northeast of Tupelo, 350 feet south of gravel road, 550 feet west and 330 feet south of northeast corner, NW¼SE¼ sec. 1, T. 9 S., R. 6 E.:

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) fine sandy loam; common, fine, distinct, dark yellowish-brown mottles; weak, fine and medium, granular structure; friable; common fine roots; common worm casts; slightly acid; clear, smooth boundary.

A1—5 to 11 inches, mottled brown (10YR 4/3), grayish brown (10YR 5/2), and light yellowish brown (10YR 6/4) fine sandy loam; weak, fine, granular structure; friable; few fine roots; few, fine, soft, red concretions; very strongly acid; clear, wavy boundary.

B1—11 to 15 inches, mottled brown (10YR 4/3), dark yellowish-brown (10YR 4/4), and grayish brown (10YR 5/2) loam; weak, fine, granular and subangular blocky structure; friable; few fine roots; few, fine, black and brown concretions; very strongly acid; clear, wavy boundary.

B21—15 to 19 inches, mottled strong-brown (7.5YR 5/6) and gray (10YR 5/1) loam; weak, medium, subangular blocky structure; friable, slightly plastic; few fine pores; very strongly acid; gradual, wavy boundary.

B22g—19 to 29 inches, gray (10YR 6/1) loam; many, medium, distinct, strong-brown (7.5YR 5/6) mottles; weak, medium, subangular blocky structure; friable, slightly plastic; few fine roots; very strongly acid; gradual, wavy boundary.

B23g—29 to 35 inches, gray (10YR 5/1) loam; many, medium, distinct, strong-brown (7.5YR 5/6) mottles and few, fine, prominent, yellowish-red mottles; weak, medium, subangular blocky structure; friable,

slightly plastic; few fine roots; very strongly acid; gradual, wavy boundary.

B24g—35 to 48 inches, gray (10YR 5/1) loam; many, medium, distinct, strong-brown (7.5YR 5/6) mottles and few, fine, prominent, yellowish-red mottles; weak, medium, subangular blocky structure; friable, slightly plastic; few, fine, soft, red concretions; gradual, wavy boundary.

B25g—48 to 61 inches, gray (10YR 6/1) loam; many, fine and medium, distinct, strong-brown (7.5YR 5/6) mottles and prominent yellowish-red (5YR 4/8) mottles; weak, medium, subangular blocky structure; friable, slightly plastic and slightly sticky; few, fine and medium, soft, red concretions; very strongly acid.

The Ap horizon is dark grayish brown to brown. In some places the A1 horizon is brown or yellowish brown, but in other places it is mottled in shades of brown and gray. In some places the upper part of the B horizon has a matrix color of dark grayish brown, yellowish brown, or brown and is faintly and distinctly mottled in shades of gray and brown, but in other places it is distinctly mottled in shades of gray and brown. The Bg horizon is gray and mottled with shades of brown, red, and yellow. The B and C horizons are loam, sandy clay loam, silt loam, and sandy loam. Clay content at depths between 10 and 40 inches ranges from 18 to 30 percent, and the content of sand coarser than very fine sand is more than 15 percent. Concretions range from few to common and from fine to medium, and they are black or red. All horizons range from strongly acid to very strongly acid.

Mantachie soils are associated with Arkabutla, Commerce, Kinston, Marietta, and Una soils. They have more coarse and fine sand in the upper part of the B horizon that the Arkabutla and Commerce soils, but they differ from the Commerce soils in being acid instead of alkaline throughout. Mantachie soils are better drained than the Kinston soils. They are more acid and not so well drained as the Marietta soils. Mantachie soils are better drained and have a less clayey B horizon than the Una soils.

Mantachie fine sandy loam (Ma).—This is a somewhat poorly drained soil on flood plains and in upland drainageways. Slopes are 0 to 2 percent.

Included with this soil in mapping are small areas of Kinston and Marietta soils. Also included are a few areas of soil that has a less clayey subsoil.

This soil is strongly acid to very strongly acid. The available water capacity is high, and permeability is moderate. Runoff is slow, and field drainage is necessary to remove excess water. Tilth can be maintained by the proper use of crop residue, but the soil tends to crust and pack if left bare. A plowpan may form in this soil.

About three quarters of this soil is in row crops and pasture. The remaining part is in hardwoods and pine timber. The soil is suited to cotton, corn, soybeans, oats, bermudagrass, bahiagrass, tall fescue, pine trees, white clover, and adapted hardwoods. Drainage and arrangement of crop rows so that they remove excess surface water are needed. The soil can be used continuously for row crops. Adequate fertilization, proper tillage, and return of crop residue to the soil are needed. (Capability unit IIw-4; woodland suitability group 1w9; wildlife suitability group 2)

Marietta Series

The Marietta series consists of moderately well drained, nearly level, medium acid to mildly alkaline soils on flood plains. The soils formed in loamy alluvium.

In a representative profile, the surface layer is dark-brown loam in the upper 5 inches and dark-brown silt loam in the lower 5 inches. The upper 5 inches of the subsoil is dark-brown silty clay loam mottled with light brownish gray. The lower 31 inches of the subsoil is mottled in shades of gray and brown. It is loam in the upper part and sandy clay loam in the lower part. The substratum, to a depth of 62 inches, is light brownish-gray, mottled sandy clay.

Representative profile of Marietta loam in a field used for soybeans and cotton, 1 mile southwest of the Shannon Post Office, south side of Chiwapa Creek, 116 feet north of powerline pole No. 99, NE¼SW¼ sec. 24, T. 11. S., R. 5 E.:

Ap—0 to 5 inches, dark-brown (10YR 4/3) loam; weak, fine, granular structure; very friable; many fine and medium roots; neutral; clear, wavy boundary.

Ap2—5 to 10 inches, dark-brown (10YR 4/3) silt loam; weak to moderate, subangular blocky structure; firm to friable; common fine roots; few gray and red root stains; neutral; clear, smooth boundary.

B21—10 to 15 inches, dark-brown (10YR 4/3) silty clay loam; common, fine, faint, light brownish-gray mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; few fine pieces of charcoal; neutral; clear, smooth boundary.

B22—15 to 24 inches, mottled light brownish-gray (2.5Y 6/2) and strong-brown (7.5YR 5/8) loam; weak, fine and medium, subangular blocky structure; friable, slightly plastic and slightly sticky; few fine roots; few, fine, brown concretions; neutral; gradual, smooth boundary.

B23g—24 to 46 inches, mottled light brownish-gray (2.5Y 6/2) and yellowish-brown (10YR 5/8) sandy clay loam; weak, fine and medium, subangular blocky structure; friable, slightly plastic and slightly sticky; few fine roots; few, fine, black concretions; slightly acid; diffuse boundary.

Cg—46 to 62 inches, light brownish-gray (2.5Y 6/2) sandy clay; many, coarse, distinct, yellowish-brown (10YR 5/8) mottles; massive; firm, plastic and sticky; common, fine, black concretions; slightly acid.

The Ap horizon is dark grayish brown, dark brown, or brown loam or silt loam. The upper part of the B horizon is dark brown or yellowish brown and has few to many grayish mottles. The lower part is mottled in shades of brown and gray. It is loam, clay loam, sandy clay loam, or silty clay loam. The clay content at depths between 10 and 40 inches ranges from 18 to 35 percent. The sand content that is coarser than very fine sand exceeds 15 percent. The C horizon is gray, light gray, or light brownish gray and is mottled in shades of brown. It is sandy clay loam or sandy clay. In the lower part of the B horizon and in the C horizon, concretions range from few to common in shades of brown and black. All horizons range from medium acid to mildly alkaline.

Marietta soils are associated with Arkabutla, Catalpa, Commerce, Kinston, Leeper, Mantachie, Robinsonville, and Tuscumbia soils. They are better drained than the Arkabutla, Commerce, Kinston, and Mantachie soils. Marietta soils differ from Arkabutla and Commerce soils in having more than 15 percent fine sand and coarse sand at depths between 10 and 40 inches. Marietta soils have a less clayey B horizon than the Catalpa, Leeper, and Tuscumbia soils. They are less well drained and more clayey than the Robinsonville soils.

Marietta loam (Mr).—This is a moderately well drained soil. Slopes are 0 to 2 percent.

Included with this soil in mapping are small areas of Commerce, Leeper, Mantachie, Robinsonville, and Tuscumbia soils.

This soil is medium acid to mildly alkaline. The available water capacity is high, and permeability is moderate. Runoff is slow, and field drainage is needed to remove excess water. Tilth can be maintained by proper use of

crop residue, but the soil tends to crust and pack if left bare. A plowpan may form in this soil.

Almost all of this soil is in row crops and pasture. The soil is well suited to cotton, corn, soybeans, truck crops, oats, tall fescue, bermudagrass (fig. 6), bahiagrass, dallis-

Figure 6.—**Beef cattle grazing Coastal bermudagrass on Marietta loam.**

grass, white clover, and adapted hardwoods. Drainage, arrangement of crop rows, adequate fertilization, proper tillage, and return of crop residue to the soil are good management practices. The soil can be used for row crops continuously. (Capability unit IIw-3; woodland suitability group 1w5; wildlife suitability group 1)

Mashulaville Series

The Mashulaville series consists of poorly drained, strongly acid or very strongly acid soils that have a fragipan. These soils formed in loamy materials and have slopes of 2 percent or less.

In a representative profile, the surface layer is dark grayish-brown silt loam about 5 inches thick. The subsurface layer is gray silt loam about 18 inches thick. At a depth of 23 inches is a gray fragipan that is about 40 inches thick. This layer is silt loam in the uppermost part and silty clay loam in the lower part.

Representative profile of Mashulaville silt loam, in a pasture, 2 miles northwest of U.S. Highway 45 at Saltillo, 40 feet south of fence in NW¼SE¼ sec. 13, T. 8 S., R. 5 E.:

A1—0 to 2 inches, dark grayish-brown (10YR 4/2) silt loam; weak, very fine, granular structure; very friable; many fine roots; few black concretions; strongly acid; abrupt, smooth boundary.

A12—2 to 5 inches, dark grayish-brown (10YR 4/2) silt loam; many, medium, distinct, gray (10YR 6/1) mottles; weak, fine, granular and subangular blocky structure; friable; common fine roots; few black concretions; very strongly acid; clear, smooth boundary.

A22g—5 to 23 inches, gray (10YR 6/1) silt loam; common, medium, distinct, yellowish-brown (10YR 5/8) mottles; weak, fine and medium, subangular blocky structure; firm, compact and brittle in some parts; few fine roots; common fine pores; few, fine, black concretions and splotches; very strongly acid; clear, wavy boundary.

Bx1—23 to 44 inches, gray (10YR 5/1) silt loam; many, coarse, distinct, yellowish-brown (10YR 5/8) mottles; weak, coarse, prismatic structure parting to weak, medium, subangular blocky structure; firm, brittle and compact; few fine roots; sand grains bridged and coated; few, medium, red concretions; seams of gray sand between prisms; very strongly acid; diffuse, smooth boundary.

Bx2—44 to 63 inches, gray (10YR 5/1) silty clay loam; many, coarse, distinct, yellowish-brown (10YR 5/8) mottles; weak, coarse, prismatic structure parting to weak, medium to coarse, subangular blocky structure; firm, sticky and plastic, compact and brittle; common clay films on ped faces; few, medium, red concretions; strongly acid.

The Ap or A1 horizon is dark grayish brown or grayish brown. The A2 horizon is dark grayish brown, grayish brown, light brownish gray, or gray. The A horizon is silt loam or fine sandy loam. The Bx horizon is light brownish-gray, gray, or light-gray fine sandy loam, loam, silt loam, or silty clay loam mottled in shades of brown. Depth to the fragipan layer ranges from 10 to 26 inches. Red and black concretions range from few to many. Clay content of the layer at a depth between 10 inches and the top of the fragipan is less than 18 percent, but it ranges from 3 to 15 percent. All horizons are strongly acid or very strongly acid.

Some of the areas are outside the defined range of the Mashulaville series. They have a color chroma of 2 above the fragipan, but this does not alter their use and management.

Mashulaville soils are associated with Falkner, Myatt, Prentiss, and Quitman soils. They differ from the Falkner and Myatt soils in having a fragipan, and they have less clay than the Falkner soils. Mashulaville soils are not so well drained as the Falkner, Prentiss, and Quitman soils.

Mashulaville fine sandy loam (Ms).—This is a poorly drained soil that has a fragipan. Slopes are 0 to 2 percent.

The surface layer is dark grayish-brown fine sandy loam about 5 inches thick. The subsurface layer, about 12 inches thick, is light brownish-gray fine sandy loam mottled with yellowish brown. At a depth of about 17 inches is a gray loam fragipan. The substratum is a gray sandy clay loam.

Included with this soil in mapping are small areas of Kinston, Myatt, and Quitman soils.

This soil is very strongly acid to strongly acid. The available water capacity is medium, and permeability is slow in the subsoil. Runoff is slow. Tilth can be improved by proper use of crop residue, but the soil tends to crust and pack if left bare.

Most of this soil is in hardwoods and pasture, but a small acreage is in row crops. This soil is suited to bermudagrass, bahiagrass, tall fescue, dallisgrass, white clover, soybeans, pine, and adapted hardwoods. Drainage is needed to remove excess surface water. The soil can be used for row crops, but it is better suited to permanent vegetation. (Capability unit IVw-1; woodland suitability group 3w9; wildlife suitability group 2)

Mashulaville silt loam (Mt).—This is a poorly drained soil that is in areas adjacent to flood plains and in small flat areas scattered throughout most of the uplands. Slopes are 0 to 2 percent.

This soil has the profile described as representative for the series.

Included with this soil in mapping are small areas of Kinston, Myatt, Prentiss, and Quitman soils.

This soil is very strongly acid to strongly acid. The available water capacity is medium, and permeability is slow in the subsoil. Runoff is slow. Tilth can be main-

tained by proper use of crop residue, but the soil tends to crust and pack if left bare.

Most of this soil is in hardwoods and pasture, but a small acreage is in row crops. The soil is suited to bermudagrass, bahiagrass, tall fescue, dallisgrass, white clover, soybeans, pine, and adapted hardwoods. Drainage is needed to remove excess surface water. The soil can be used for row crops, but it is better suited to permanent vegetation. (Capability unit IVw-1; woodland suitability group 3w9; wildlife suitability group 2)

Myatt Series

The Myatt series consists of nearly level, poorly drained, strongly acid or very strongly acid soils on uplands and second bottoms. These soils formed in loamy materials.

In a representative profile, the surface layer is dark-brown fine sandy loam in the upper 2 inches, light-gray fine sandy loam in the middle 4 inches, and gray loam mottled with yellowish brown in the lower 7 inches. The subsoil, to a depth of 38 inches, is gray mottled with yellowish brown, red, and strong brown. It is loam in the upper part and clay loam in the lower part. The substratum is gray clay loam mottled with yellowish brown.

Representative profile of Myatt fine sandy loam, in a wooded pasture, 1.9 miles northwest of Bissell, 495 feet west and 165 feet north of the southeast corner of NE¼NE¼ sec. 31, T. 9 S., R. 5 E.:

Ap—0 to 2 inches, dark-brown (10YR 3/3) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; very strongly acid; abrupt, smooth boundary.

A21g—2 to 6 inches, light-gray (10YR 7/2) fine sandy loam; many, medium, distinct mottles of strong brown (7.5YR 5/6); weak, fine and medium, subangular blocky structure; friable; many fine roots; few brown and black concretions; very strongly acid; clear, smooth boundary.

A22g—6 to 13 inches, gray (10YR 6/1) loam; many, medium, distinct mottles of yellowish brown (10YR 5/8); weak, medium, subangular blocky structure; friable; few fine roots; few, fine, brown concretions; very strongly acid; gradual, smooth boundary.

B21tg—13 to 26 inches, gray (10YR 6/1) loam; many, medium, distinct mottles of yellowish brown (10YR 5/8); weak, medium, subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; few fine pores; very strongly acid; gradual, smooth boundary.

B22tg—26 to 38 inches, gray (10YR 6/1) clay loam; many, medium, distinct mottles of yellowish brown (10YR 5/8), strong brown (7.5YR 5/8), and red (2.5YR 4/8); moderate, medium, subangular and angular blocky structure; friable to firm, slightly sticky; few fine roots; gray coatings on ped faces; few, patchy clay films on ped faces; very strongly acid; gradual, smooth boundary.

Cg—38 to 52 inches, gray (10YR 6/1) clay loam that has pockets of sandy clay loam and loam; many, medium, distinct mottles of yellowish brown (10YR 5/8); massive; friable, slightly sticky; few, fine, black concretions; very strongly acid.

The Ap horizon is dark grayish brown to dark brown. The A2 horizon is light gray or light brownish gray. The A horizon is fine sandy loam or loam. The B horizon is gray or light gray and has few to many mottles of yellowish brown, red, or strong brown. The B horizon is loam, clay loam, or silty clay loam. Clay content of the upper 20 inches of the Bt horizon ranges from 20 to 33 percent, and the content of fine sand to coarse sand is more than 15 percent. The C horizon is a gray or light-gray sandy clay loam, clay loam, or silty clay loam. Brown and black concretions are few to common. Reaction of the soil is strongly acid or very strongly acid.

Myatt soils are associated with Falkner, Mashulaville, Quitman, and Savannah soils. They are not so well drained as the Falkner soils. Myatt soils lack the fragipan that is typical of the Mashulaville, Quitman, and Savannah soils.

Myatt fine sandy loam (My).—This is a poorly drained soil on uplands and second bottoms. Slopes are 0 to 2 percent.

This soil has the profile described as representative for the series.

Included with this soil in mapping are small areas of Falkner, Mashulaville, and Quitman soils.

This soil is strongly acid or very strongly acid. The available water capacity is high, and permeability is slow in the subsoil. Runoff is slow to very slow.

Most of this soil is in woodland, but the rest is in pasture and hay. The soil is suited to bermudagrass, bahiagrass, tall fescue, dallisgrass, white clover, soybeans, adapted hardwoods, and pines. Drainage is needed to remove excess water. The soil can be used for row crops, but it is better suited to permanent vegetation. (Capability unit IVw-1; woodland suitability group 2w9; wildlife suitability group 2)

Oktibbeha Series

The Oktibbeha series consists of moderately well drained to well drained, medium acid to very strongly acid soils. These soils formed in clay and marl over calcareous formations. Slopes range from 2 to 17 percent.

In a representative profile, the surface layer is dark-brown silty clay loam about 1 inch thick. The subsoil is yellowish-red silty clay in the upper 4 inches, yellowish-red clay mottled with light yellowish brown in the next 7 inches, and mottled yellowish-red, light yellowish-brown, and light-gray clay in the lower 29 inches. The substratum is olive marly clay mottled with light gray. Below this is light-gray chalk.

Representative profile of Oktibbeha silty clay, 5 to 12 percent slopes, severely eroded, in a pasture, 3 miles southwest of Tupelo, 30 feet north of a local road, and 410 feet west of the Natchez Trace Parkway in SW¼SW¼ sec. 16, T. 10 S., R. 5 E.:

Ap—0 to 1 inches, dark-brown (10YR 4/3) silty clay loam; weak, fine and medium, granular structure; firm; many fine roots; medium acid; abrupt, wavy boundary.

B21t—1 to 5 inches, yellowish-red (5YR 4/8) silty clay; moderate to strong, fine and medium, subangular blocky structure; firm, sticky and very plastic; few fine roots; clay films or pressure faces on peds; strongly acid; clear, smooth boundary.

B22t—5 to 12 inches, yellowish-red (5YR 4/8) clay; common, medium, distinct, light yellowish-brown (10YR 6/4) mottles; moderate to strong, fine and medium, subangular blocky structure; firm, sticky and very plastic; few fine roots; clay films or pressure faces on peds; very strongly acid; clear, wavy boundary.

B23t—12 to 23 inches, mottled yellowish-red (5YR 5/8) and light yellowish-brown (10YR 6/4) clay; moderate to strong, fine and medium, subangular blocky structure; firm, sticky and very plastic; few fine roots; clay films or pressure faces on peds; very strongly acid; gradual, wavy boundary.

B24t—23 to 32 inches, mottled yellowish-red (5YR 4/8), light yellowish-brown (10YR 6/4), and light-gray (2.5Y 7/2) clay; moderate to strong, fine and medium, angular and subangular blocky structure; firm, very sticky and very plastic; clay films or pressure faces on peds; common medium slickensides that do not intersect; very strongly acid; gradual, wavy boundary.

B25t—32 to 41 inches, mottled yellowish-brown (10YR 5/8) and light-gray (2.5Y 7/2) clay; moderate, fine and medium, angular and subangular blocky structure; firm, very sticky and very plastic; clay films or pressure faces on peds; common medium slickensides that do not intersect; strongly acid; clear, wavy to irregular boundary.

C—41 to 48 inches, olive (5Y 5/4) marly clay; common, medium, distinct, light-gray (2.5Y 7/2) mottles; massive in place; firm, very sticky and very plastic; many fine lime nodules; many, fine, black concretions; neutral; clear, irregular boundary.

R—48 to 54 inches, light-gray (2.5Y 7/2) chalk; brownish-yellow (10YR 6/8) streaks; very firm.

Depth to marly clay or chalk ranges from 24 to 50 inches. This soil cracks to depths of more than 20 inches during dry periods. The A1 horizon is dark grayish brown to brown and dark brown. The A2 horizon, where present, is pale brown to brown. The Ap horizon ranges from dark brown to yellowish red. The A horizon is silty clay loam or silty clay. The upper part of the B horizon is yellowish red to strong brown, and the lower part is yellowish red, strong brown, or yellowish brown and has few to many grayish mottles or is mottled in shades of brown, yellow, gray, or red. The B horizon is silty clay and clay. The clay content in the upper 20 inches of this horizon is more than 60 percent. The A and B horizons range from medium acid to very strongly acid. The C horizon is olive to brownish yellow mottled with shades of gray. The C horizon is clay and marly clay. Lime nodules in the C horizon range from few to many and from fine to coarse. Few to many, fine, black and brown concretions are in some profiles. The C horizon ranges from neutral to moderately alkaline.

Oktibbeha soils are associated with Falkner, Kipling, Ora, Providence, Sumter, and Tippah soils. They have a more clayey B horizon than the Falkner, Kipling, and Tippah soils. They lack the fragipan that is typical of the Ora and Providence soils. Oktibbeha soils have a redder and less alkaline B horizon than the Sumter soils.

Oktibbeha silty clay loam, 2 to 5 percent slopes, eroded (ObB2).—This is a moderately well drained to well drained, gently sloping soil on ridgetops.

The surface layer is brown silty clay loam about 3 inches thick. The subsoil is about 23 inches thick and is clay. The upper part is yellowish red, and the lower part is mottled in shades of brown, gray, yellow, and red. The substratum is olive marly clay.

Included with this soil in mapping are small areas of Tippah soils and acid clayey soils that have a solum less than 20 inches thick over chalk. In most areas there are common rills and a few shallow gullies and, in a few areas, a few deep gullies.

This soil has a medium acid to very strongly acid surface layer and subsoil. The available water capacity is high, and permeability is slow to very slow. Cracks form when the soil is dry. Runoff is medium, and if the soil is cultivated the erosion hazard is moderate. Good tilth is difficult to maintain, but it can be improved by the careful management of crop residue.

Most of this soil is used for pasture and woodland, but a small acreage is in row crops. This soil is suited to soybeans, small grain, cotton, dallisgrass, bermudagrass, tall fescue, white clover, adapted hardwoods, and pine trees. Among the management measures needed to control erosion are contour cultivation, terraces, and use of close-growing crops in the cropping system about half of the time. (Capability unit IIIe–2; woodland suitability group 3c8; wildlife suitability group 4)

Oktibbeha silty clay loam, 5 to 8 percent slopes, eroded (ObC2).—This is a moderately well drained to well drained, moderately sloping soil on side slopes.

The surface layer is brown silty clay loam about 3 inches thick. The subsoil is clay about 26 inches thick. The upper part is yellowish red, and the lower part is mottled in shades of red, brown, yellow, and gray. It is underlain at a depth of about 29 inches by soft chalk or marly clay. In some areas the surface layer is a mixture of material from the original surface layer and the subsoil. Shallow gullies and a few deep gullies are in most areas.

Included with this soil in mapping are small areas of Sumter soils and a soil that is less than 20 inches deep to chalk.

This soil is medium acid to very strongly acid in the surface layer and subsoil. The available water capacity is high, and permeability is slow to very slow. Cracks form when the soil is dry. Runoff is medium to rapid, and the soil will erode if cultivated. Tilth is difficult to maintain, but it can be improved by careful management of crop residue.

Most of this soil is in woodland and pasture, but a small acreage is in row crops. This soil is suited to soybeans, oats, cotton, tall fescue, bermudagrass, bahiagrass, sericea lespedeza, adapted hardwoods, and pine trees. Because of the severe erosion hazard, the soil should be in permanent vegetation most of the time. Among the management measures needed if the soil is used for row crops are terraces, grassed waterways, contour cultivation, and the inclusion of close-growing vegetation in the cropping system about two-thirds of the time. (Capability unit IVe–2; woodland suitability group 3c8; wildlife suitability group 4)

Oktibbeha silty clay, 2 to 5 percent slopes, severely eroded (OhB3).—This is a moderately well drained to well drained, gently sloping, severely eroded soil on ridgetops.

The surface layer is brown silty clay about 2 inches thick. The subsoil is clay about 33 inches thick. The upper part is red, and the lower part is mottled in shades of red, gray, and brown. The substratum is chalk. The surface layer in many areas consists entirely of material from the original subsoil. Shallow and deep gullies are present in most areas.

Included with this soil in mapping are small areas of Tippah soils and soils that are less than 20 inches deep to chalk. About 10 percent of the acreage has a silty clay loam surface soil.

This soil is medium acid to very strongly acid in the surface layer and subsoil. The available water capacity is high, and permeability is slow to very slow. Cracks form when the soil is dry. Runoff is medium, and if the soil is cultivated, the erosion hazard is moderate to severe. Good tilth is difficult to maintain, but it can be improved by the careful management of crop residue.

Most of this soil is in pasture and woodland, but a small acreage is in row crops. This soil is suited to soybeans, oats, tall fescue, bermudagrass, bahiagrass, sericea

lespedeza, adapted hardwoods, and pine trees. It should be in permanent vegetation because of the severe erosion hazard. Among the management measures that should be used if row crops are grown are terraces, grassed waterways, contour cultivation, and the inclusion of close-growing vegetation in the cropping system about two-thirds of the time. (Capability unit IVe–2; woodland suitability group 3c8; wildlife suitability group 4)

Oktibbeha silty clay, 5 to 12 percent slopes, severely eroded (OhD3).—This is a moderately well drained to well drained clayey soil on side slopes. This soil has the profile described as representative for the series. Many shallow gullies and common deep gullies are in most areas.

Included with this soil in mapping are small areas of Sumter soils and areas in which the depth to marl and chalk is less than 20 inches.

This soil is medium acid to very strongly acid in the surface layer and subsoil. The available water capacity is high, and permeability is slow to very slow. Cracks form when the soil is dry. Runoff is rapid, and the soil erodes rapidly if left bare.

Most of this soil is in woodland and pasture. This soil is suited to bermudagrass, bahiagrass, tall fescue, sericea lespedeza, adapted hardwoods, and pine trees. Because of the severe erosion, this soil should be maintained in permanent vegetation. (Capability unit VIe–1; woodland suitability group 3c8; wildlife suitability group 4)

Oktibbeha and Sumter soils, 8 to 17 percent slopes, severely eroded (OkE3).—These soils are on short side slopes. The areas generally range from 10 to 50 acres in size, but the pattern of soils is not uniform throughout the areas. Some areas are Oktibbeha silty clay, some are Sumter silty clay, and some areas contain both Oktibbeha and Sumter soils.

These soils generally make up about 76 percent of the acreage. Oktibbeha soil makes up about 56 percent and Sumter soil, about 20 percent. The remaining 24 percent is made up of an acid clayey soil that is less than 20 inches deep to chalk or marl, Demopolis soils, and chalk gullies.

The Oktibbeha soil is moderately well drained to well drained and occurs on the upper two-thirds of most side slopes. The surface layer is brown silty clay about 3 inches thick. The subsoil is clay about 26 inches thick. The upper part is yellowish red, and the lower part is mottled in shades of red, brown, and gray. The substratum is olive marly clay. Oktibbeha soil is medium acid to very strongly acid in the surface layer and subsoil. Available water capacity is high, and permeability is slow to very slow. Runoff is rapid.

Sumter soil generally occurs on the lower side slopes. It is calcareous and has a light olive-brown silty clay surface layer about 3 inches thick. Below this is olive silty clay and soft chalk. Marly clay and chalk are at a depth of about 26 inches. Sumter soil is calcareous. Available water capacity is medium, and permeability is slow. Runoff is rapid.

About half of the acreage is in woodland, and the rest is in pasture and hay. These soils are suited to bermudagrass, bahiagrass, and sericea lespedeza. The Oktibbeha soil is suited to redcedar. Because of the slope and the erosion hazard, these soils should be in permanent vegetation. (Capability unit VIe–1; Oktibbeha part in woodland suitability group 3c8, Sumter part in woodland suitability group 4c2c; wildlife suitability group 6)

Ora Series

The Ora series consists of moderately well drained, very strongly acid to strongly acid soils that have a fragipan. These soils formed in loamy materials. Slopes range from 2 to 20 percent.

In a representative profile, the surface layer is dark-brown fine sandy loam about 4 inches thick. The subsurface layer is yellowish-brown fine sandy loam 3 inches thick. The subsoil is yellowish-red loam about 12 inches thick. At a depth of 19 inches is a fragipan that is fine sandy loam 31 inches thick. The upper part of the fragipan is mottled yellowish red, light gray, and brown. The lower part is yellowish red mottled with light gray. The substratum is yellowish-red sandy clay loam mottled with light gray.

Representative profile of Ora fine sandy loam, 2 to 5 percent slopes, eroded, in a pasture, 2 miles south of Saltillo, SW¼NW¼SE¼ sec. 32, T. 8 S., R. 6 E.:

Ap—0 to 4 inches, dark-brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B1—4 to 7 inches, yellowish-brown (10YR 5/6) fine sandy loam; weak, fine and medium, granular and subangular blocky structure; friable; common fine roots; very strongly acid; clear, smooth boundary.

B2t—7 to 19 inches, yellowish-red (5YR 5/8) loam; moderate, fine and medium, subangular blocky structure; friable; few fine roots; common clay films on vertical and horizontal ped faces, sand grains coated and bridged with clay; very strongly acid; clear, smooth boundary.

Bx1—19 to 34 inches, mottled yellowish-red (5YR 5/8), light-gray (10YR 7/1), and brown (7.5YR 4/4) fine sandy loam; moderate, fine and medium, subangular blocky structure; tends to be platy; firm; compact and brittle; few fine roots; thin patchy clay films on ped faces; sand grains coated and bridged with clay; common fine voids; common, medium, black coatings; very strongly acid; gradual, smooth boundary.

Bx2—34 to 50 inches, yellowish-red (5YR 5/8) fine sandy loam; many, medium, distinct, light-gray (10YR 7/2) mottles; weak to moderate, fine and medium, subangular blocky structure; firm; compact and brittle; patchy clay films on peds; sand grains coated and bridged with clay; seams about ¼ to ½ inch wide filled with light-gray (10YR 7/1) fine sandy loam; very strongly acid; diffuse, smooth boundary.

C—50 to 55 inches, yellowish-red (5YR 5/8) sandy clay loam; many, medium, distinct, light-gray (10YR 7/1) mottles; structureless; friable to firm; very strongly acid.

The Ap horizon is dark brown, dark grayish brown, or yellowish brown. The Bt horizon is red or yellowish-red loam, clay loam, silty clay loam, or sandy clay loam. Clay content of the upper 20 inches ranges from 20 to 32 percent, and sand coarser than very fine sand is more than 15 percent. The Bx and C horizons are mottled in shades of red, brown, yellow, and gray, or they have a matrix color of yellowish red mottled with shades of gray, brown, yellow, and red. The Bx and C horizons are fine sandy loam, loam, or sandy clay loam. The soil is strongly acid or very strongly acid.

Ora soils are associated with Cahaba, Oktibbeha, Providence, Ruston, and Savannah soils. They differ from the Cahaba, Oktibbeha, and Ruston soils in having a fragipan. They have more sand in the upper part of the B horizon than the Providence soils. They have redder colors in the upper part of the B horizon than Savannah soils.

Ora fine sandy loam, 2 to 5 percent slopes, eroded (OrB2).—This is a moderately well drained soil that has a fragipan. It is on ridgetops.

This soil has the profile described as representative for the series. Shallow rills and gullies are present in some areas. In the plow layer there is some mixing of material from the original surface layer and subsoil.

Included with this soil in mapping are small areas of Cahaba, Ruston, and Savannah soils.

This soil is very strongly acid to strongly acid. Permeability in the upper part of the subsoil is moderate and moderately slow in the fragipan. Available water capacity and runoff are medium. Tilth can be maintained by proper use of crop residue, but the soil packs and crusts if left bare.

Most of this soil is in cultivation or in pasture, and the rest is in woods. This soil is suited to cotton, corn, soybeans, oats, truck crops, bahiagrass, dallisgrass, bermudagrass, tall fescue, white clover, annual lespedeza, adapted hardwoods, and pine trees. Under good management the soil can be row cropped continuously. Management includes terraces, contour cultivation, adequate fertilization, and return of crop residue to the soil. (Capability unit IIe-1; woodland suitability group 3o7; wildlife suitability group 4)

Ora fine sandy loam, 5 to 8 percent slopes, eroded (OrC2).—This is a moderately well drained soil that has a fragipan. It is on side slopes.

The surface layer is yellowish-brown fine sandy loam about 5 inches thick. The upper part of the subsoil is a yellowish-red sandy clay loam about 13 inches thick, and below this, at a depth of about 18 inches is a mottled red, yellowish-red, and gray loam fragipan. There are rills, shallow gullies, and a few deep gullies in most areas.

Included with this soil in mapping are small areas of Cahaba, Ruston, and Savannah soils.

This soil is very strongly acid to strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity and runoff are medium. Tilth can be maintained or improved by proper use of crop residue, but the soil tends to pack and crust if left bare. The erosion hazard is moderate.

Most of this soil is in woods or pasture, and the rest is in row crops. This soil is suited to cotton, corn, soybeans, oats, bermudagrass, bahiagrass, tall fescue, dallisgrass, annual lespedeza, white clover, adapted hardwoods, and pine trees. Row crops can be grown about half the time, if good management is used. Management includes terraces, grassed waterways, contour cultivation, adequate fertilization, and use of close-growing crops in the cropping sequence. (Capability unit IIIe-1; woodland suitability group 3o7; wildlife suitability group 4)

Ora fine sandy loam, 8 to 12 percent slopes, severely eroded (OrD3).—This is a moderately well drained soil that has a fragipan. This soil is on side slopes and on the sharp breaks near the ridgetops.

The surface layer is strong-brown fine sandy loam about 2 inches thick. The upper part of the subsoil is yellowish-red sandy clay loam about 12 inches thick. At a depth of about 14 inches is a thick mottled brown, yellowish-brown, and gray fragipan. Rills and shallow gullies are present in most areas, and the plow layer consists mostly of material from the original subsoil.

Included with this soil in mapping are small areas of Cahaba and Ruston soils. This soil is very strongly acid to strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is rapid, and the erosion hazard is severe.

Most of this soil is in pasture and woods. Because of the slope and the severe erosion, the soil should be kept in permanent vegetation. It is suited to bermudagrass, bahiagrass, sericea lespedeza, annual lespedeza, and pine trees. (Capability unit VIe-3; woodland suitability group 3o7; wildlife suitability group 4)

Prentiss Series

The Prentiss series consists of moderately well drained, nearly level to gently sloping, very strongly acid to strongly acid soils that have a fragipan. These soils formed in loamy materials. Slopes range from 0 to 5 percent.

In a representative profile, the surface layer is yellowish-brown fine sandy loam about 5 inches thick. The subsoil is yellowish-brown and brownish-yellow loam in the upper 13 inches. Below this is a mottled yellowish-brown, light brownish-gray, and strong-brown loam fragipan about 38 inches thick.

Representative profile of Prentiss fine sandy loam, 0 to 2 percent slopes, from an idle field, one-half mile south of the Brewer Community Building 90 feet west and 235 feet north of the southeast corner of NW¼ NE¼ sec. 8, T. 11 S., R. 6 E.:

Ap—0 to 5 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine, granular structure; very friable; common fine roots; strongly acid; abrupt, wavy boundary.

B21—5 to 13 inches, yellowish-brown (10YR 5/6) loam; weak, fine and medium, subangular blocky structure; friable; few fine roots; sand grains coated and bridged with clay; common fine pores; few pockets of uncoated sand grains; very strongly acid; clear, smooth boundary.

B22t—13 to 18 inches, brownish-yellow (10YR 6/8) loam; few, fine, faint, pale-brown mottles; weak to moderate, fine and medium, subangular blocky structure; friable; few fine roots; few, thin, patchy clay films; sand grains coated and bridged with clay; common fine pores; very strongly acid; clear, smooth boundary.

Bx1—18 to 30 inches, mottled yellowish-brown (10YR 5/8), light brownish-gray (10YR 6/2), and strong-brown (7.5YR 5/8) loam; moderate, fine and medium, angular and subangular blocky structure; firm, compact, brittle; common fine voids, few, fine, black and brown concretions and stains, common clay films on peds; peds are coated with light-gray (10YR 7/1) silt loam; very strongly acid; gradual, smooth boundary.

Bx2—30 to 38 inches, mottled gray (10YR 6/1), yellowish-brown (10YR 5/8), and strong-brown (7.5YR 5/8) loam; moderate, fine and medium, subangular blocky structure; firm, compact and brittle; sand grains coated and bridged with clay; few patchy clay films on peds, thin seams of gray silt between peds; very strongly acid; gradual, smooth boundary.

Bx3—38 to 48 inches, mottled gray (10YR 6/1), yellowish-brown (10YR 5/8), and strong-brown (7.5YR 5/8) loam; moderate, fine and medium, subangular blocky structure; firm, compact and brittle; patchy clay

films; sand grains coated and bridged with clay; seams of gray silt between peds; very strongly acid.

The Ap horizon is dark grayish brown, brown, yellowish brown, dark yellowish brown, or pale brown. The B horizon is yellowish-brown, light yellowish-brown, or brownish-yellow loam or silt loam. Content of clay ranges from 12 to 15 percent, and that of sand coarser than very fine sand is more than 15 percent. The Bx horizon is mottled with shades of gray, brown, yellow, and red. The C horizon is loam or sandy loam. Depth to the fragipan ranges from 14 to 26 inches. There are few to common, fine and medium, red and black concretions in some profiles. The soil is strongly acid or very strongly acid.

Prentiss soils are associated with the Providence, Quitman, Savannah, and Mashulaville soils. They have a less clayey B horizon than the Providence and Savannah soils. They are better drained than the Quitman and Mashulaville soils.

Prentiss fine sandy loam, 0 to 2 percent slopes (PrA).—This is a moderately well drained soil that has a fragipan. This soil is on ridgetops.

This soil has the profile described as representative for the series.

Included with this soil in mapping are small areas of Quitman and Savannah soils.

This soil is very strongly acid to strongly acid. It has a perched water table above the fragipan during periods of high rainfall. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium, and in cultivated areas the erosion hazard is slight. Tilth can be maintained by proper use of crop residue, but the soil tends to crust and pack if left bare. A plowpan may form in the soil.

Most of this soil is in cultivation or in pasture, and a small acreage is in woods. This soil is suited to cotton, corn, soybeans, oats, truck crops, bahiagrass, dalligrass, bermudagrass, tall fescue, white clover, annual lespedeza, hardwoods, and pine trees. Surface drainage and arrangement of crop rows are needed to remove this water. If drained and adequately fertilized, this soil is suited to row crops grown continuously. (Capability unit IIw–1; woodland suitability group 3o7; wildlife suitability group 3)

Prentiss fine sandy loam, 2 to 5 percent slopes, eroded (PrB2).—This is a moderately well drained soil that has a fragipan. This soil is on ridgetops.

The surface layer is brown fine sandy loam about 4 inches thick. The upper part of the subsoil is yellowish-brown loam about 15 inches thick, and the lower part is a thick mottled brown, red, and gray loam fragipan. The surface layer has been thinned by erosion and, in some areas, is a mixture of material from the original surface layer and subsoil. Rills are common in most areas, and occasional shallow gullies are present.

Included with this soil in mapping are small areas of Quitman and Savannah soils. Also included are areas that have a few deep gullies.

This soil is very strongly acid to strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium, and in cultivated areas the erosion hazard is slight to moderate. Tilth can be maintained by proper use of crop residue, but these soils will crust and pack if left bare. A plowpan may form.

Most of this soil is in cultivation or in pasture, and the rest is in woods. This soil is suited to cotton, corn, soybeans, oats, truck crops, bahiagrass, dallisgrass, bermudagrass, tall fescue, white clover, annual lespedeza, adapted hardwoods, and pine trees. Under good management it can be row cropped continuously. Management includes terraces, contour cultivation, adequate fertilization, and return of crop residue to the soil. (Capability unit IIe–1; woodland suitability group 3o7; wildlife suitability group 4)

Providence Series

The Providence series consists of moderately well drained, very strongly acid to strongly acid soils that have a fragipan. These soils formed in loamy materials. Slopes range from 2 to 8 percent.

In a representative profile, the surface layer is yellowish-brown silt loam about 4 inches thick. The subsoil is strong-brown silt loam in the upper 14 inches. Below this is a mottled strong-brown, light yellowish-brown, light brownish-gray, or yellowish-red loam fragipan about 32 inches thick.

Representative profile of Providence silt loam, 2 to 5 percent slopes, in a hayfield, 25 feet west of blacktop road in NE¼SW¼SE¼ sec. 1, T. 8 S., R. 5 E.:

Ap—0 to 4 inches, yellowish-brown (10YR 5/4) silt loam; weak, very fine, granular structure; very friable; common fine roots; strongly acid; abrupt, smooth boundary.

B2t—4 to 18 inches, strong-brown (7.5YR 5/6) silt loam; moderate, fine and medium, subangular blocky structure; friable; common fine roots; patchy clay films on ped faces; very strongly acid; clear, smooth boundary.

Bx1—18 to 23 inches, mottled strong-brown (7.5YR 5/6), light yellowish-brown (10YR 6/4), and yellowish-red (5YR 5/8) loam; moderate, medium and coarse, angular and subangular blocky structure; firm, compact and brittle; few fine roots; thin patchy clay films on peds; few fine pores; common, fine and medium, black concretions; very strongly acid; gradual, smooth boundary.

IIBx2—23 to 30 inches, mottled strong-brown (7.5YR 5/6), light yellowish-brown (10YR 6/4), and yellowish-red (5YR 5/8) loam; moderate, coarse, angular blocky structure; firm, compact and brittle; few thin patchy films on ped faces; light brownish-gray (10YR 6/2) silt loam in seams between peds; very strongly acid; gradual, smooth boundary.

IIBx3—30 to 50 inches, mottled brownish-yellow (10YR 6/8), light brownish-gray (10YR 6/2), and strong-brown (7.5YR 5/6) loam; moderate, coarse, angular blocky structure; firm, compact and brittle; thin patchy clay films on ped faces; light brownish-gray (10YR 6/2) silt loam in seams between peds; very strongly acid.

The Ap horizon is yellowish brown, brown, or dark grayish brown. The Bt horizon is silt loam or silty clay loam that is dominantly strong brown but ranges to yellowish red. Content of clay in the upper 20 inches ranges from 18 to 30 percent, and that of sand coarser than very fine sand is less than 15 percent.

The Bx horizon is mottled in shades of brown, yellowish gray, and red. The Bx horizon is silt loam, loam that has a high sand content, or sandy clay loam. Few to common, fine, black coats and concretions are present in the fragipan layer of most profiles. A few, fine, red concretions are present in some profiles. Some profiles have a IIBt horizon that ranges from red to gray and from fine sandy loam to clay. The soil is strongly acid or very strongly acid.

Providence soils are associated with Ora, Prentiss, Tippah, and Oktibbeha soils. They have a siltier Bt horizon than the Ora soils. They are more clayey in the B horizon than the Prentiss soils. Providence soils differ from the Tippah and Oktibbeha soils in having a fragipan.

Providence silt loam, 2 to 5 percent slopes (PsB).—This is a moderately well drained soil that has a fragipan. This soil is on ridgetops.

This soil has the profile described as representative for the series.

Included with this soil in mapping are small areas of Prentiss soils and Providence soils, heavy substratum.

This soil is very strongly acid to strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity and runoff are medium. Tilth can be maintained or improved by proper use of crop residue, but this soil tends to pack and crust if left bare. A plowpan may form in this soil.

Most of this soil is in cultivation or in pasture, and the rest is in woods. This soil is suited to cotton, corn, soybeans, oats, truck crops, bahiagrass, bermudagrass, tall fescue, dallisgrass, white clover, annual lespedeza, pine trees, and adapted hardwoods. Under good management it can be row cropped continuously. Management measures include terraces, contour cultivation, adequate fertilization, and return of crop residue to the soil. (Capability unit IIe-1; woodland suitability group 3o7; wildlife suitability group 4)

Providence silt loam, 2 to 5 percent slopes, eroded (PsB2).—This is a moderately well drained soil that has a fragipan. This soil is on ridgetops.

The surface layer is brown silt loam about 3 inches thick. The upper 15 inches of the subsoil is yellowish-red silty clay loam. Below this, at a depth of about 18 inches, is a thick, mottled, red, yellowish-red, and yellowish-brown fragipan. Rills and shallow gullies are in most fields. In most places the plow layer is a mixture of material from the original surface layer and the subsoil.

Included with this soil in mapping are small areas of Prentiss soils and the Providence soils, heavy substratum.

This soil is very strongly acid to strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity and runoff are medium. Tilth can be maintained by proper use of crop residue, but this soil tends to crust and pack if left bare. A plowpan may form in this soil.

Most of this soil is in cultivation or in pasture, and the rest is in woods. This soil is suited to cotton, corn, soybeans, oats, truck crops, bahiagrass, bermudagrass, tall fescue, dallisgrass, white clover, annual lespedeza, adapted hardwoods, and pine trees. Under good management this soil can be row cropped continuously. Management includes terraces, contour cultivation, adequate fertilization, and return of crop residue to the soil. (Capability unit IIe-1; woodland suitability group 3o7; wildlife suitability group 4)

Providence silt loam, 5 to 8 percent slopes, eroded (PsC2).—This is a moderately well drained soil that has a fragipan. This soil is on ridgetops and short side slopes.

The surface layer is brown silt loam about 2 inches thick. The subsoil, about 18 inches thick, is a strong brown silty clay loam. It is underlain at a depth of about 20 inches by a mottled brown, yellowish-brown and gray fragipan. Rills and shallow gullies are present, and the plow layer consists mainly of material from the subsoil.

Included with this soil in mapping are small areas of Providence heavy substratum.

This soil is very strongly acid to strongly acid. Permeability is moderate in the upper part of the subsoil, and it is moderately slow in the fragipan. Available water capacity is medium. Runoff is medium. Tilth can be maintained by proper use of crop residue, but this soil tends to crust and pack if left bare. Erosion is a moderate hazard.

Most of this soil is in pasture or woods. The rest is in row crops. This soil is suited to cotton, corn, soybeans, oats, bermudagrass, bahiagrass, tall fescue, dallisgrass, annual lespedeza, white clover, adapted hardwoods, and pine trees. Management measures should include terraces, grassed waterways, contour cultivation, return of crop residue to the soil, and use of close growing crops in the cropping system about half the time. Row crops can be grown about one-half the time under good management. (Capability unit IIIe-1; woodland suitability group 3o7; wildlife suitability group 4)

Representative profile of Providence silt loam, heavy substratum, 2 to 5 percent slopes, eroded, in an area of scrub hardwoods, one-fourth mile north of the Tupelo Country Club, east side of street, SW¼NE¼ sec. 24, T. 9 S., R. 5 E.:

Ap—0 to 4 inches, yellowish-brown (10YR 5/4) silt loam; weak, fine and medium, granular and subangular blocky structure; very friable; common fine and medium roots; very strongly acid; clear, smooth boundary.

B21t—4 to 18 inches, strong-brown (7.5YR 5/8) silty clay loam; moderate, fine and medium, subangular blocky structure; friable; common fine and medium roots; thin patchy clay films on peds; few fine voids; very strongly acid; clear, smooth boundary.

B22t—18 to 24 inches, strong-brown (7.5YR 5/6) silty clay loam; common, medium, distinct, light yellowish-brown (10YR 6/4) mottles; moderate, fine and medium, subangular blocky structure; friable; few fine roots; thin patchy clay films on peds; few fine voids; very strongly acid; clear, wavy boundary.

Bx1—24 to 29 inches, mottled yellowish-brown (10YR 5/8), light yellowish-brown (10YR 6/4), and light brownish-gray (10YR 6/2) silt loam; moderate, medium, subangular blocky structure; firm, compact and brittle; patchy thin clay films; few fine voids; few, fine, black concretions; very strongly acid; gradual, wavy boundary.

Bx2—29 to 38 inches, mottled yellowish-brown (10YR 5/8), light yellowish-brown (10YR 6/4), and yellowish-red (5YR 5/8) silty clay loam; moderate, coarse, prismatic structure parting to moderate, fine and medium, subangular blocky structure; firm, compact and brittle; patchy thin clay films on peds; many fine voids; light-gray (10YR 7/1) silt in thin vertical seams; very strongly acid; gradual, wavy boundary.

IIBt—38 to 72 inches, mottled gray (10YR 6/1), yellowish-brown (10YR 5/8), and red (2.5YR 4/8) silty clay; weak and moderate, fine and medium, subangular blocky structure; firm; very strongly acid.

Providence silt loam, heavy substratum, 2 to 5 percent slopes, eroded (PtB2).—This is a moderately well drained soil that has a fragipan. This soil is on ridgetops.

This soil has a yellowish-brown silt loam surface layer about 4 inches thick. The subsoil is strong-brown silty clay loam to a depth of 24 inches. Below this is a mottled brownish silt loam to silty clay loam fragipan. At depths between 38 and 72 inches is mottled gray, yellowish-brown, and red silty clay.

Included with the soil in mapping are small areas of Oktibbeha and Tippah soils. Rills and shallow gullies are common in most areas, and there are a few deep gullies. There is some mixing of the original surface layer and the upper part of the subsoil in most fields. Also included are small areas of soils that have a silty clay loam surface layer. In places the plow layer consists wholly of the original surface layer, and in other places it consists wholly of the original subsoil.

This soil is very strongly acid to strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan and clayey layers. Available water capacity is medium. Runoff is medium. Good tilth can be maintained by the proper use of crop residue, but this soil will crust and pack if left bare. A plowpan may form in this soil. If this soil is cultivated, the erosion hazard is moderate.

Most of this soil is in cultivation or in pasture; only a small acreage remains in woods. This soil is suited to cotton, corn, soybeans, oats, truck crops, bahiagrass, bermudagrass, tall fescue, dallisgrass, white clover, annual lespedeza, adapted hardwoods, and pine trees. Under good management it can be row cropped continuously. Management measures include terraces, contour cultivation, adequate fertilization, and return of crop residue to the soil. (Capability unit IIe-1; woodland suitability group 3o7; wildlife suitability group 4)

Providence silt loam, heavy substratum, 5 to 8 percent slopes, eroded (PtC2).—This is a moderately well drained soil that has a fragipan. This soil is on side slopes.

The surface layer is yellowish-brown silt loam about 2 inches thick. The upper 12 inches of the subsoil is yellowish-red silty clay loam. It is underlain at a depth of about 14 inches by a moderately thick, mottled gray, brown, and red silt loam fragipan. Below the fragipan and at a depth of about 39 inches is a clay or silty clay layer.

In most places, part of the original surface layer has been eroded away. Rills are numerous, shallow gullies are common, and there are a few deep gullies in some areas. The surface layer has been thinned by erosion and is a mixture of the original surface layer and part of the subsoil.

Included with this soil in mapping are a few small areas of Oktibbeha and Tippah soils.

This soil is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan and clayey layer. Available water capacity and runoff are medium. If this soil is cultivated, the erosion hazard is moderate.

Most of this soil is in pasture and woods, and a small amount is in row crops. This soil is suited to cotton, corn, soybeans, oats, bermudagrass, dallisgrass, bahiagrass, tall fescue, annual lespedeza, white clover, adapted hardwoods, and pine trees. It can be used for row crops about one-half the time under good management. Management includes terraces, grassed waterways, contour cultivation, return of crop residue to the soil, and use of close-growing vegetation about half the time. (Capability unit IIIe-1; woodland suitability group 3o7; wildlife suitability group 4)

Quitman Series

The Quitman series consists of somewhat poorly drained, very strongly acid to strongly acid soils that have a fragipan. These soils formed in loamy materials. Slopes are 0 to 2 percent.

In a representative profile, the surface layer is dark grayish-brown silt loam about 3 inches thick. The subsurface layer is light yellowish-brown silt loam about 7 inches thick. The upper 9 inches of the subsoil is light yellowish-brown silt loam that has mottles in shades of gray and yellow. At a depth of 19 inches is a thick fragipan. The uppermost 20 inches is mottled gray, light yellowish-brown, and yellowish-brown loam; the next 8 inches is mottled gray and yellowish-brown loam; and the lower 13 inches is gray loam mottled with yellowish brown.

Representative profile of Quitman silt loam, 0 to 2 percent slopes, in an area of hardwoods, 2 miles west of Saltillo, NW¼NW¼ sec. 19, T. 8 S., R. 6 E.:

A1—0 to 3 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; very friable; many fine roots; few, fine, distinct, dark-brown root stains; strongly acid; abrupt, wavy boundary.

A2—3 to 10 inches, light yellowish-brown (10YR 6/4) silt loam; weak, fine, granular structure and subangular blocky structure; very friable; many fine and medium roots; very strongly acid; clear, wavy boundary.

B21t—10 to 15 inches, light yellowish-brown (10YR 6/4) silt loam that has high sand content; common, medium, distinct, light brownish-gray (10YR 6/2) mottles; weak, fine and medium, subangular blocky structure; friable; common fine and medium roots; clay bridging and coating on ped faces; few, fine, black concretions; very strongly acid; clear, wavy boundary.

B22t—15 to 19 inches, light yellowish-brown (10YR 6/4) silt loam that has high sand content; many, medium, distinct mottles of light brownish gray (10YR 6/2) and brownish yellow (10YR 6/8); moderate, medium, subangular blocky structure; friable; common fine and medium roots; patchy clay films and bridging on ped faces; few, fine, red and black concretions; very strongly acid; clear, wavy boundary.

Bx1—19 to 27 inches, mottled gray (10YR 6/1), light yellowish-brown (10YR 6/4), and yellowish-brown (10YR 5/8) loam; moderate, coarse, prismatic structure parting to strong, medium, subangular blocky structure; firm, compact and brittle; common fine roots between prisms; patchy clay films on ped faces; thin silt coatings; common fine pores; few, fine, red and black concretions; very strongly acid; clear, wavy boundary.

Bx2—27 to 39 inches, mottled gray (10YR 6/1), light yellowish-brown (10YR 6/4), and yellowish-brown (10YR 5/8) loam; moderate, coarse, prismatic structure parting to strong, medium, subangular blocky structure; firm, compact and brittle; common fine roots between prisms; patchy clay films on ped faces; thick silt coatings in seams; common pores; common brown concretions; very strongly acid; gradual, wavy boundary.

Bx3—39 to 47 inches, mottled gray (10YR 5/1) and yellowish-brown (10YR 5/8) loam; strong, coarse, prismatic structure parting to moderate, coarse, angular blocky structure; firm, compact and brittle;

few fine roots between prisms; common clay films on ped faces; thick silt coatings in seams; common pores; common brown concretions; very strongly acid; gradual, wavy boundary.

Bx4—47 to 60 inches +, gray (10YR 5/1) loam; many, coarse, distinct, yellowish-brown (10YR 5/8) mottles; moderate, coarse, prismatic structure parting to moderate, coarse, subangular blocky structure; firm, compact and brittle; common clay films on ped faces; few fine pores and red concretions; very strongly acid.

The Ap and A2 horizons are brown, light yellowish brown, or yellowish brown. The A1 horizon is dark grayish brown or brown. The Bt horizon is light yellowish brown or yellowish brown that has mottles in shades of gray and yellow. Some profiles are distinctly mottled with shades of gray and brown. The Bt horizon is loam or silt loam. Clay content of the Bt horizon ranges from 15 to 17 percent. The fragipan occurs at a depth of 17 to 21 inches. The Bx horizon is mottled in shades of gray and brown or is gray mottled with yellowish brown. It is silt loam or loam. Red, brown, or black concretions range from few to many in the Bx horizon. The soil is strongly acid or very strongly acid.

Quitman soils are associated with Mashulaville, Myatt, Prentiss, and Savannah soils. They are better drained and are less gray in the B horizon than the Mashulaville and Myatt soils. Myatt soils lack a fragipan and have a more clayey B horizon. Quitman soils are not so well drained as the Prentiss and Savannah soils.

Quitman silt loam, 0 to 2 percent slopes (QuA).—This is a somewhat poorly drained soil that has a fragipan.

Included with this soil in mapping are small areas of Mashulaville and Prentiss soils. Also included are small areas that have slopes up to 4 percent.

This soil is very strongly acid to strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow through the fragipan. Available water capacity is medium, and runoff is slow. Tilth is easily maintained by proper use of crop residue.

Most of this soil is in cultivation or in pasture plants, and the rest is in woods. This soil is suited to cotton, corn, soybeans, oats, tall fescue, bermudagrass, common lespedeza, white clover, adapted hardwoods, and pine.

Excess surface water can be removed by drainage and arrangement of rows. Under good management this soil can be used for row crops continuously. (Capability unit IIIw-2; woodland suitability group 2w8; wildlife suitability group 2)

Robinsonville Series

The Robinsonville series consists of well-drained, slightly acid to mildly alkaline soils. These soils formed in stratified loamy and sandy alluvium.

In a representative profile, the surface layer is dark-brown sandy loam in the upper 6 inches and mottled yellowish-brown and yellow loamy sand in the lower 4 inches. The next 26 inches is stratified brownish silt loam, sandy loam, or loamy sand. Below this is very dark grayish-brown silty clay loam.

Representative profile of Robinsonville sandy loam, in an area of Robinsonville soils, in a soybean field, 150 feet south of U.S. Highway No. 45 and 75 feet west of the Town Creek channel, SW¼NE¼ sec. 27, T. 11 S., R. 6 E.:

Ap1—0 to 6 inches, dark-brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable; common fine roots; mildly alkaline; abrupt, smooth boundary.

Ap2—6 to 10 inches, mottled yellowish-brown (10YR 5/4) and yellow (10YR 8/6) loamy sand; structureless; loose; few fine roots; few bedding planes; mildly alkaline; abrupt, smooth boundary.

C1—10 to 14 inches, dark yellowish-brown (10YR 4/4) silt loam; thin lenses of yellowish-brown (10YR 5/4) loamy sand; structureless, but has thin horizontal bedding planes; very friable; few fine roots; few, fine, brown concretions; neutral; abrupt, wavy boundary.

C2—14 to 16 inches, very pale brown (10YR 8/3) loamy sand; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; structureless, but has thin horizontal bedding planes; very friable; few fine roots; neutral; abrupt, wavy boundary.

C3—16 to 24 inches, yellowish-brown (10YR 5/4) sandy loam; structureless, but has thin horizontal bedding planes; very friable; few fine roots; neutral; abrupt, wavy boundary.

C4—24 to 30 inches, mottled, very pale brown (10YR 8/3) and brown (10YR 5/3) loamy sand; structureless; loose; neutral; abrupt, wavy boundary.

C5—30 to 36 inches, stratified pale-brown (10YR 6/3) silt loam, brown (10YR 5/3) sandy loam, and reddish-brown (5YR 4/4) loamy sand; structureless; very friable; neutral; abrupt, wavy boundary.

IIAb—36 to 50 inches, very dark grayish-brown (10YR 3/2) silty clay; many, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; massive; friable; common, fine, black concretions; neutral.

The Ap horizon is dark brown, yellow, or yellowish brown sandy loam, loam, silt loam, or loamy sand. The upper part of the C horizon is dark yellowish brown, yellowish brown, and very pale brown, and the lower part is mottled in shades of brown. At a depth below 20 inches in places there are few to common, fine and medium, gray mottles. The C horizon is stratified sandy loam, silt loam, and loamy sand. The IIAb horizon, when present, is very dark grayish-brown or dark grayish-brown silt loam or silty clay loam. The average clay content between depths of 10 and 40 inches is less than 18 percent, and sand coarser than very fine sand is more than 15 percent. The soil ranges from slightly acid to mildly alkaline.

These soils are outside the defined range of the Robinsonville series as they have a texture of silty clay loam in the lower part of the Ab horizon. This does not affect use and management of the soils.

Robinsonville soils are associated with Commerce, Leeper, Marietta, and Tuscumbia soils. They are better drained and have a less clayey profile than any of the associated soils.

Robinsonville soils (Ro).—These are well-drained soils along the channels of the larger streams (fig. 7). Slopes

Figure 7.—Robinsonville soils along Chiwapa Creek. Soil to left of channel is Marietta loam.

are 0 to 2 percent. The surface layer ranges from silt loam to loamy sand.

Included with the soils in mapping are small areas of Commerce, Leeper, Marietta, and Tuscumbia soils.

These soils are slightly acid to mildly alkaline. Permeability is moderate, and available water capacity is medium. Runoff is slow, and field drainage is needed to remove excess water. Soil tilth can be improved by the proper use of crop residue. Flooding is a limitation to the use of these soils.

Most of the acreage is in row crops or pasture. This soil is well suited to cotton, corn, soybeans, truck crops, oats, tall fescue, bermudagrass, bahiagrass, dallisgrass, white clover, and adapted hardwoods. Drainage, arrangement of crop rows, adequate fertilization, proper tillage, and return of crop residue to the soil are good management practices. These soils can be used for row crops continuously. (Capability unit IIw-3; woodland suitability group 1o4; wildlife suitability group 1)

Ruston Series

The Ruston series consists of well-drained, very strongly acid to strongly acid soils. These soils formed in loamy materials. Slopes range from 5 to 30 percent.

In a representative profile, the surface layer is dark grayish-brown fine sandy loam about 2 inches thick. The subsurface layer is light yellowish-brown fine sandy loam about 8 inches thick. The subsoil is yellowish-red loam to a depth of 24 inches. Below this is a 12-inch layer of very pale brown loamy sand, and below this, yellowish red loam and sandy clay loam that has mottles in shades of brown and red.

Representative profile of Ruston fine sandy loam, in an area of Cahaba and Ruston fine sandy loams, 17 to 30 percent slopes, in mixed hardwoods and pines, 1½ miles north of Skyline, SE¼NW¼SW¼ sec. 26, T. 9 S., R. 6 E.:

A1—0 to 2 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

A2—2 to 10 inches, light yellowish-brown (10YR 6/4) fine sandy loam; weak, fine, granular and subangular blocky structure; very friable; common fine and medium roots; very strongly acid; abrupt, wavy boundary.

B21t—10 to 19 inches, yellowish-red (5YR 5/8) loam; weak and moderate, fine and medium, subangular blocky structure; friable; common fine and medium roots; thin patchy clay films on ped faces; very strongly acid; clear, wavy boundary.

B22t—19 to 24 inches, yellowish-red (5YR 5/8) loam; common, coarse, distinct, light yellowish-brown (10YR 6/4) mottles; weak, fine and medium, subangular blocky structure; friable; common fine and medium roots; sand grains coated and bridged with clay; very strongly acid; abrupt, wavy boundary.

A'2—24 to 36 inches, very pale brown (10YR 7/3) loamy sand; weak, very fine, granular structure; very friable; few fine roots; sand grains coated with clay; very strongly acid; clear, wavy boundary.

B'21t—36 to 50 inches, yellowish-red (5YR 5/8) loam; few, fine, faint, yellowish-brown mottles; weak, fine and medium, subangular blocky structure; friable; thin patchy clay films on ped faces; very strongly acid; gradual, wavy boundary.

B'22t—50 to 66 inches, yellowish-red (5YR 5/8) sandy clay loam; common, medium, distinct, red (2.5YR 5/8) and yellowish-brown (10YR 5/8) mottles; weak and moderate, fine and medium, subangular blocky structure; friable; common clay films on ped faces; very strongly acid.

The Ap and A2 horizons are brown, dark grayish brown, or light yellowish brown. A thin dark grayish-brown, dark-gray, or very dark grayish-brown A1 horizon is in undisturbed areas. The Bt horizon and B't horizon are dominantly yellowish red but range to red. The B't horizon has mottles in shades of red and brown. The B horizon is loam, sandy clay loam, or clay loam. Clay content of the upper 20 inches of the Bt horizon ranges from 18 to 35 percent. The A'2 horizon ranges from very pale brown to brown and from loamy sand to sandy loam. Some profiles do not have the A'2 horizon and B'2t horizon but have a solum more than 60 inches thick. Some profiles have a C horizon at a depth of only 60 inches. This horizon is sandy loam or loamy sand, or it consists of stratified layers of loam to sandy clay loam. The soils are strongly acid or very strongly acid, except where they have been limed.

Ruston soils are associated with Cahaba, Luverne, and Ora soils. They have a thicker solum than the Cahaba soils. They are less clayey in the upper 20 inches of the B horizon than the Luverne soils. Ruston soils lack the fragipan that is typical of the Ora soils.

Savannah Series

The Savannah series consists of moderately well drained, strongly acid or very strongly acid soils that have a fragipan. These soils formed in loamy materials. Slopes are 0 to 5 percent.

In a representative profile, the surface layer is yellowish-brown fine sandy loam about 4 inches thick. The subsoil is brown loam to a depth of 23 inches. Below this is a thick fragipan. The uppermost 9 inches is brown loam mottled with light brownish gray and yellowish red; the next 12 inches is mottled strong-brown, yellowish-brown, and light brownish-gray sandy loam; and the lower 16 inches is strong-brown sandy loam mottled with light brownish gray and brownish yellow.

Representative profile of Savannah fine sandy loam, 2 to 5 percent slopes, in a sweetpotato field, 2½ miles southwest of Saltillo, south of field road along edge of bottom, SE¼SW¼ sec. 24, T. 8 S., R. 5 E.:

Ap—0 to 4 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B21t—4 to 18 inches, brown (7.5YR 4/4) loam; weak, fine and medium, subangular blocky structure; friable; sand grains bridged and coated with clay; common fine roots; very strongly acid; clear, smooth boundary.

B22t—18 to 23 inches, brown (7.5YR 4/4) loam; common, medium, distinct, pale-brown (10YR 6/3) mottles; weak, fine and medium, subangular blocky structure; friable; few fine roots; few, thin, patchy clay films; sand grains coated and bridged with clay; very strongly acid; clear, smooth boundary.

Bx1—23 to 32 inches, brown (7.5YR 4/4) loam; common, medium, distinct mottles of light brownish-gray (10YR 6/2) and yellowish-red (5YR 5/8); moderate, medium, subangular blocky structure; firm, compact, and brittle; few fine roots between peds; few, thin, patchy clay films; sand grains coated and bridged with clay; very strongly acid; gradual, smooth boundary.

Bx2—32 to 44 inches, mottled strong-brown (7.5YR 5/6), yellowish-brown (10YR 5/4), and light brownish-gray (10YR 6/2) sandy loam; moderate, medium, prismatic structure parting to moderate, medium, subangular blocky; firm; compact and brittle; few

fine roots between peds; sand grains bridged and coated with clay; few fine voids; thin seams between prisms filled with gray sand; very strongly acid; gradual, smooth boundary.

Bx3—44 to 60 inches, strong-brown (7.5YR 5/6) sandy loam; many, medium, distinct mottles of light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6); weak, medium, prismatic structure parting to weak, coarse, subangular blocky; firm, compact and brittle; sand grains bridged and coated with clay; few fine voids; thick seams between prisms filled with gray sand; very strongly acid.

The Ap horizon is dark grayish brown, brown, or yellowish brown. The Bt horizon is brown, yellowish-brown, or strong-brown loam or silt loam. Clay content of the Bt horizon ranges from 16 to 18 percent, and silt content ranges from 20 to 50 percent. The content of sand coarser than very fine sand exceeds 15 percent. In some places the Bx horizon is mottled in shades of gray, brown, yellow, and red, but in other places it has a matrix color of strong brown, brown, or yellowish brown distinctly mottled in shades of brown, gray, and red. Depth to the fragipan ranges from 17 to 28 inches. The fragipan is sandy loam or loam. Some profiles have few to many, fine and medium, black coatings and few to common, fine and medium, red and black concretions.

The Savannah soils are associated with Myatt, Ora, Prentiss, and Quitman soils. They are not so gray as the Myatt soils, and they differ from those soils in having a fragipan. Savannah soils have a subsoil that is not so red as that of the Ora soils. They have a more clayey B horizon than the Prentiss soils. Savannah soils are more clayey in the B horizon and are better drained than the Quitman soils. These soils differ from the Savannah series in that they contain slightly less than 18 percent clay at depths between 10 and 40 inches. This difference does not alter their use and behavior.

Savannah fine sandy loam, 2 to 5 percent slopes (SaB).—This is a moderately well drained soil that has a fragipan.

This soil has a brown fine sandy loam surface layer about 7 inches thick. The subsoil is yellowish-brown loam in the upper 11 inches. Below this is a thick, mottled, brown, yellow, and gray fragipan.

Included with this soil in mapping are small areas of Quitman soil. About 25 percent of this soil has a silt loam surface layer.

This soil is strongly acid or very strongly acid. It has a perched water table during periods of high rainfall. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium, and in cultivated areas the erosion hazard is slight. Tilth can be maintained by proper use of crop residue, but the soil tends to crust and pack if left bare. A plowpan may form in this soil.

Most of this soil is in cultivation or in pasture, but a small acreage is in woods. This soil is suited to cotton, corn, soybeans, oats, truck crops, bahiagrass, bermudagrass, dallisgrass, tall fescue, white clover, annual lespedeza, adapted hardwoods, and pine trees (fig. 8). Drainage and arrangement of crop rows so that excess water is removed are necessary. This soil is suited to continuous row crops if it is drained and adequately fertilized. (Capability unit IIw–1; woodland suitability group 3o7; wildlife suitability group 3)

Savannah fine sandy loam, 0 to 2 percent slopes (SaA).—This is a moderately well drained soil that has a fragipan. This soil has the profile described as representative for the series.

The plow layer has been thinned by erosion and, in some areas, is a mixture of the original surface layer and

***Figure 8.*—A plantation of loblolly pine on Savannah fine sandy loam, 0 to 2 percent slopes.**

part of the subsoil. Rills are common in most areas, and a few shallow gullies are also evident.

Included with the soil in mapping are small areas of Quitman and Ora soils.

This soil is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium, and if this soil is cultivated, the erosion hazard is slight to moderate. Tilth can be maintained by the proper use of crop residue, but soil tends to pack and crust if left bare. A plowpan may form in the soil.

Most of this soil is in cultivation or in pasture, and the rest is in woods. This soil is suited to cotton, corn, soybeans, oats, truck crops, bahiagrass, bermudagrass, tall fescue, dallisgrass, white clover, annual lespedeza, adapted hardwoods, and pine trees. Under good management this soil is suited to row crops grown continuously. Good management measures include terraces, contour cultivation, adequate fertilization, and return of crop residue to the soil. (Capability unit IIe–1; woodland suitability group 3o7; wildlife suitability group 4)

Sumter Series

The Sumter series consists of well-drained, calcareous soils. These soils formed in clayey materials. Slopes range from 5 to 17 percent.

In a representative profile, the surface layer is olive silty clay about 5 inches thick. The upper 10 inches of the subsoil is mottled pale-olive and light yellowish-brown silty clay. The lower 12 inches of the subsoil is pale-yellow silty clay mottled with olive yellow and strong brown. The substratum at a depth of 27 inches is light olive-gray marly clay.

Representative profile of Sumter silty clay, 5 to 12 percent slopes, eroded, on idle land about one-fourth mile south of the Guntown school, SE¼SE¼NE¼ sec. 28, T. 7 S., R. 6 E.:

Ap—0 to 5 inches, olive (5YR 5/3) silty clay; moderate, fine and medium, granular and subangular blocky structure; friable; common fine roots; common fine lime nodules; calcareous; moderately alkaline; clear, wavy boundary.

B21—5 to 15 inches, mottled pale-olive (5Y 6/3) and light yellowish-brown (2.5Y 6/4) silty clay; moderate, fine and medium, angular and subangular blocky structure; friable to firm; few fine roots; many fine particles of white (5Y 8/1) chalk; calcareous; moderately alkaline; clear, wavy boundary.

B22—15 to 27 inches, pale-yellow (5Y 7/3) silty clay; many, medium, distinct, olive-yellow (5Y 6/6) mottles and few, coarse, distinct, strong-brown (7.5YR 5/8) mottles; strong, fine and medium, angular blocky structure; firm to friable; few fine roots; many medium particles of white (5Y 8/1) chalk; few, medium, red concretions; calcareous; moderately alkaline; gradual, wavy boundary.

C1—27 to 44 inches, light olive-gray (5Y 6/2) marly clay; many, coarse, distinct, olive-yellow (5Y 6/6) and strong-brown (7.5YR 5/8) mottles; moderate, medium, platy structure; moderately alkaline; gradual, wavy boundary.

C2—44 to 58 inches, mottled light olive-gray (5Y 6/2) and pale-brown (10YR 6/3) marl; massive; firm; calcareous; moderately alkaline.

The Ap horizon ranges from olive to brown. The B horizon is pale yellow, pale olive, or light yellowish brown and has brownish mottles. It is silty clay or clay, and the clay content ranges from 40 to 60 percent. Depth to the C horizon ranges from 20 to 41 inches. The C horizon is light olive gray, pale olive, or gray and has mottles in shades of brown and yellow. This layer is soft chalk or marly clay. The soil is mildly alkaline or moderately alkaline.

Sumter soils are associated with Demopolis, Oktibbeha, and Tippah soils. They have a thicker solum than Demopolis soils. They lack the reddish acid B horizon that is typical of the Oktibbeha soils. Sumter soils differ from Tippah soils in having a more clayey and calcareous B horizon.

Sumter silty clay, 5 to 12 percent slopes, eroded (SuD2).—This is a well-drained, calcareous, sloping soil on ridgetops and side slopes.

Included with this soil in mapping are small areas of Oktibbeha soils.

This soil is mildly alkaline or moderately alkaline and calcareous. Available water capacity is medium, permeability is slow, and runoff is medium to rapid. The soil shrinks and cracks when dry.

About half of this soil is in pasture, and the rest is used for scattered stands of mixed cedar and Osage-orange. Because of the erosion hazard, this soil should be in permanent vegetation.

This soil is well suited to johnsongrass, tall fescue, bermudagrass, dallisgrass, alfalfa, sweetclover, and white clover. Capability unit VIe–2; woodland suitability group 4c2c; wildlife suitability group 6).

Tippah Series

The Tippah series consists of moderately well drained, very strongly acid to strongly acid soils. These soils formed in loamy and clayey materials. Slopes range from 0 to 8 percent.

In a representative profile, the surface layer is brown silt loam about 4 inches thick. The subsoil is yellowish-brown silt loam in the upper 4 inches. Below this is strong-brown silty clay loam mottled with light brownish gray in the next 16 inches. The next layer is mottled red, pale-yellow, and light-gray silty clay to a depth of about 54 inches. Below this is light yellowish-brown clay mottled with red and about 8 inches thick.

Representative profile of Tippah silt loam, 2 to 5 percent slopes, eroded, in a pasture, 1¼ miles north of State Route 6, at the Lee-Pontotoc County line, SW¼SW¼ sec. 31, T. 9 S., R. 5 E.:

Ap—0 to 4 inches, brown (10YR 5/3) silt loam; weak, fine, granular and subangular blocky structure; very friable; common fine roots; strongly acid; abrupt, smooth boundary.

B1t—4 to 8 inches, yellowish-brown (10YR 5/8) silt loam; weak, fine and medium, subangular blocky structure; friable; few fine roots; patchy clay films on ped faces; very strongly acid; clear, smooth boundary.

B21t—8 to 19 inches, strong-brown (7.5YR 5/6) silty clay loam; strong, fine and medium, angular and subangular blocky structure; friable; few fine roots; continuous clay films on ped faces; very strongly acid; clear, smooth boundary.

B22t—19 to 24 inches, strong-brown (7.5YR 5/6) silty clay loam; many, medium, distinct and light, brownish-gray (10YR 6/2) mottles; strong, fine and medium, angular and subangular blocky structure; friable; few fine roots; continuous clay films on ped faces; very strongly acid; gradual, smooth boundary.

IIB23t—24 to 31 inches, mottled red (2.5YR 4/8) and light-gray (2.5YR 7/2) silty clay; string, medium, angular and subangular blocky structure; firm to friable, plastic and sticky; few fine roots; pressure faces on peds; very strongly acid; gradual, smooth boundary.

IIB24t—31 to 54 inches, mottled red (2.5YR 4/8) and pale-yellow (2.5Y 7/4) silty clay; moderate, medium, angular and subangular blocky structure; firm, plastic and sticky; few fine roots; few coarse pressure faces; very strongly acid; diffuse, smooth boundary.

IIB25t—54 to 62 inches +, light yellowish brown (2.5Y 6/4) clay; common, medium, prominent, red (2.5YR 4/8) mottles; moderate, medium, angular and subangular blocky structure; firm, very plastic and very sticky; coarse pressure faces; strongly acid.

The Ap horizon is brown or yellowish brown. The B21t horizon is yellowish red to strong brown. The B22t horizon is similar in color to the B21t horizon, but it has light brownish-gray mottles. The Bt horizon is silt loam or silty clay loam. The IIBt horizon is mottled in shades of red, gray, yellow, or brown. It is silty clay or clay. Depth to the clayey horizon ranges from 17 to 28 inches. Chalk occurs in some profiles at depths of 4 to 7 feet. A few, fine, black concretions are present in some profiles. The soil is strongly acid or very strongly acid.

Tippah soils are associated with Falkner, Kipling, Oktibbeha, Providence, and Sumter soils. They are redder in the upper part of the B horizon than the Falkner soils. They are less clayey in the upper part of the B horizon than the Kipling, Oktibbeha, and Sumter soils, and Sumter soils are also calcareous. Tippah soils lack the fragipan that is typical of the Providence soils.

Tippah silt loam, 0 to 2 percent slopes (ThA).—This is a moderately well drained soil on broad ridgetops.

The surface layer is brown silt loam about 5 inches thick. The upper 20 inches of the subsoil is strong-brown silty clay loam. It is underlain by mottled red and yellow silty clay.

Included with this soil in mapping are small areas of Kipling and Providence soils.

This soil is very strongly acid to strongly acid. Permeability is slow, available water capacity is high, and runoff is slow. If the soil is cultivated, the erosion hazard is slight. Tilth can be maintained by proper use of crop residue, but this soil crusts and packs if left bare. A plowpan may form in this soil.

Most of this soil is in cultivation or in pasture, but the rest is in upland hardwoods. The soil is suited to cotton, corn, soybeans, oats, truck crops, bahiagrass, bermudagrass, dallisgrass, tall fescue, annual lespedeza, white clover, adapted hardwoods, and pine trees. The

management needs are drainage and arrangement of crop rows so that excess water is removed. This soil can be used for row crops under good management that includes drainage and adequate fertilization. (Capability unit IIw-1; woodland suitability group 3o7; wildlife suitability group 3)

Tippah silt loam, 2 to 5 percent slopes, eroded (ThB2).—This is a moderately well drained soil on ridgetops.

This soil has the profile described as representative for the series. The subsoil is exposed in many areas, and rills and shallow gullies are present.

Included with this soil in mapping are small areas of Oktibbeha and Providence soils. The surface layer of about 15 percent of the mapped areas is severely eroded. Where severely eroded, the surface layer is strong-brown silty clay loam, and many rills and a few shallow gullies are present.

This soil is very strongly acid to strongly acid. Permeability is slow, available water capacity is high, and runoff is medium. If the soil is cultivated, the erosion hazard is slight to moderate. Tilth can be maintained by the proper use of crop residue, but the soil crusts and packs if left bare. A plowpan may form in this soil.

About half of this soil is in cultivation or in pasture, and the rest is in upland hardwoods and pines. This soil is suited to corn, soybeans, oats, truck crops, bahiagrass, bermudagrass, tall fescue, dallisgrass, white clover, annual lespedeza, adapted hardwoods, and pine trees. Under good management this soil is suited to row crops grown continuously. Management includes terraces, contour cultivation, adequate fertilization, and return of crop residue to the soil. (Capability unit IIe-1; woodland suitability group 3o7; wildlife suitability group 4)

Tippah silt loam, 5 to 8 percent slopes (ThC).—This is a moderately well drained soil on ridgetops and side slopes.

The surface layer is brown silt loam about 4 inches thick. The upper 16 inches of the subsoil is brown silty clay loam. It is underlain by mottled red and yellow silty clay.

Included with this soil in mapping are small areas of Oktibbeha and Providence soils.

This soil is very strongly acid to strongly acid. Permeability is slow, available water capacity is high, and runoff is medium. Tilth can be maintained by proper use of crop residue, but the soil tends to crust and pack if left bare. A plowpan may form in this soil.

About half of this soil is in cultivation or in pasture, and the rest is in upland hardwoods and pine. This soil is suited to soybeans, oats, truck crops, bahiagrass, bermudagrass, dallisgrass, tall fescue, annual lespedeza, white clover, adapted hardwoods, and pine trees. This soil can be used for row crops about one-half the time under good management. Management includes terraces, grassed waterways, contour tillage, return of crop residue to the soil, and use of close-growing vegetation about one-half the time. (Capability unit IIIe-1; woodland suitability group 3o7; wildlife suitability group 4)

Tuscumbia Series

The Tuscumbia series consists of poorly drained, medium acid to mildly alkaline soils on flood plains. These soils formed in clayey alluvium.

In a representative profile, the surface layer is brownish silty clay loam about 7 inches thick. The upper 29 inches of the subsoil is gray silty clay mottled with yellowish red. The lower 15 inches of the subsoil is gray clay mottled with yellowish red. The substratum is mottled gray and yellowish-red clay.

Representative profile of Tuscumbia silty clay loam, in a soybean field, approximately 1¾ miles northeast of Tupelo City Hall, 50 feet east of field road, and 480 feet north of levee, SE¼SE¼ sec. 20, T. 9 S., R. 6 E.:

Ap1—0 to 2 inches, dark-brown (10YR 3/3) silty clay loam; moderate, fine and medium, granular structure; friable; many fine roots; mildly alkaline; abrupt, smooth boundary.

Ap2—2 to 7 inches, dark yellowish-brown (10YR 3/4) silty clay loam, moderate, very thick, platy structure; firm, plastic; common fine roots; mildly alkaline; clear, smooth boundary.

B21g—7 to 22 inches, gray (10YR 5/1) silty clay; many, medium, prominent, yellowish red (5YR 5/8) mottles; moderate, fine and medium, subangular blocky structure; firm, plastic and sticky; few fine and medium roots; few, fine, black and brown concretions; slightly acid; gradual, smooth boundary.

B22g—22 to 36 inches, gray (10YR 5/1) silty clay; many medium, prominent, yellowish red (5YR 5/8) mottles; moderate, fine and medium, subangular blocky structure; firm, very plastic and very sticky; few fine roots; few, fine, black concretions; slightly acid; diffuse boundary.

B3g—36 to 51 inches, gray (10YR 5/1) clay; many, medium, prominent, yellowish red (5YR 5/8) mottles; moderate, coarse, subangular blocky structure; firm, very plastic and very sticky; few fine roots; few, fine, black concretions; few, medium, black splotches; slightly acid; diffuse, smooth boundary.

Cg—51 to 65 inches, mottled gray (10YR 5/1) and yellowish-red (5YR 5/8) clay; massive; firm, very plastic and very sticky; few, fine, black concretions; slightly acid.

The Ap horizon is dark brown, dark grayish brown, dark yellowish brown, or yellowish brown. The B2 horizon and B3 horizon are light brownish gray or gray and have yellowish-red mottles. They are silty clay or clay. Average clay content at depths between 10 and 40 inches ranges from 35 to 60 percent. The soil ranges from medium acid to mildly alkaline. Brown and black concretions range from few to common.

Tuscumbia soils are associated with Catalpa, Commerce, Leeper, Marietta, and Robinsonville soils. They are more gray in the B horizon and not so well drained as the Catalpa and Leeper soils. Tuscumbia soils have a more clayey B horizon and are not so well drained as the Commerce, Marietta, and Robinsonville soils.

Tuscumbia silty clay loam (Tu).—This is a poorly drained soil on flood plains. Slopes are 0 to 2 percent.

Included with this soil in mapping are small areas of Leeper soils. Also included are a few areas that have a fine sandy loam or loam surface layer.

This soil is medium acid to mildly alkaline. Permeability is very slow. Available water capacity is high, and runoff is very slow. Tilth is difficult to maintain, but it can be helped by proper use of crop residue. The soil shrinks and cracks when dry. Flooding and a high water table are limitations in the use of this soil.

This soil is in cultivation or in pasture. It is suited to soybeans, bermudagrass, tall fescue, dallisgrass, white clover, and adapted hardwoods. Drainage, adequate fertilization, and return of crop residue to the soil are needed when used for row crops. (Capability unit

IIIw-1; woodland suitability group 2w6; wildlife suitability group 1)

Una Series

The Una series consists of poorly drained, very strongly acid to strongly acid soils on flood plains. These soils formed in clayey alluvium.

In a representative profile, the surface layer is very dark grayish-brown silty clay about 5 inches thick. The subsoil, to a depth of 57 inches, is gray clay mottled with yellowish brown.

Representative profile of Una silty clay, in a soybean field, 4 miles north of Tupelo, in Mud Creek bottom, 2/10 mile east of Gulf Mobile and Ohio Railroad, and 880 feet south of local road, NW1/4SE1/4 sec. 8, T. 9 S. R. 6 E.:

Ap—0 to 5 inches, very dark grayish-brown (10YR 3/2) silty clay; moderate, fine and medium, granular structure; friable, plastic and sticky; common fine roots; medium acid; abrupt, smooth boundary.

B21g—5 to 14 inches, gray (5Y 6/1) clay; many, common, medium, distinct, yellowish-brown (10YR 5/8) mottles; moderate, medium, subangular blocky structure; firm, very plastic and very sticky; few fine roots; common, fine, soft, brown concretions; very strongly acid; gradual, smooth boundary.

B22g—14 to 30 inches, gray (5Y 6/1) clay; common, medium, distinct, yellowish-brown (10YR 5/8) mottles; moderate, fine and medium, subangular blocky structure; firm, very plastic and very sticky; few fine roots; common, fine, soft, brown concretions and few, fine, black concretions; very strongly acid; gradual, smooth boundary.

B23g—30 to 57 inches, gray (5Y 5/1) clay; many, medium, distinct, yellowish-brown (10YR 5/8) mottles; moderate, fine, angular blocky structure; firm, very plastic and very sticky; common, fine and medium, brown concretions; very strongly acid.

The Ap horizon is very dark grayish brown or dark brown. The B2 horizon is gray or light brownish-gray silty clay, sandy clay, or clay that has few to many brownish mottles. Clay content at depths between 10 and 40 inches ranges from 35 to 60 percent, and content of brown and black concretions ranges from few to common. The soil is strongly acid or very strongly acid except where it has been limed.

Una soils are associated with the Kinston and Mantachie soils. They have a more clayey B horizon than the Kinston and Mantachie soils. They are not so well drained as the Mantachie soils.

Una silty clay (Un).—This is a poorly drained soil on flood plains. Slopes are 0 to 2 percent.

Included with this soil in mapping are small areas of Kinston and Mantachie soils and a few areas of soils that have a fine sandy loam surface layer.

This soil is very strongly acid to strongly acid. Permeability is very slow, available water capacity is high, and runoff is very slow. Tilth can be improved by proper use of crop residue. Flooding and wetness caused by a high water table are limitations in using this soil.

Most of this soil is in pasture or row crops. This soil is suited to soybeans, bermudagrass, tall fescue, dallisgrass, white clover, and adapted hardwoods. Drainage, adequate fertilization, and return of crop residue to the soil are needed if the soil is used for row crops. (Capability unit IIIw-1; woodland suitability group 2w6; wildlife suitability group 2)

Urban Land

Urban land (Ur) consists of areas, mainly within the city limits of Tupelo, that have been cut and filled. The cuts and fills range from 2 to 20 feet in depth but, in most places, are 3 to 10 feet deep. The original soil profiles have been so extensively altered that the soil series are no longer identifiable.

The areas are variable in texture, drainage, and kind of underlying material, and they should be carefully investigated before they are used for any kind of construction.

In the area along both sides of U. S. Highway 45 from the city limits of Verona north to Kings Creek, the original upland soils were chiefly Demopolis and Oktibbeha soils that are underlain by chalk. In some areas, however, the chalk has been removed, and calcareous sand has been exposed. Areas of such soils as the Catalpa and Leeper soils have been covered by the fills.

In the area north of Kings Creek along both sides of U. S. Highway 45 to the northern city limits, a series of low hills have been leveled, and the soil material has been used for highway fills and other purposes. Cahaba, Ruston, and Ora soils were the original soils in this area.

The area within the main business district of Tupelo orginally consisted of such soils as Ora, Prentiss, and Quitman soils.

From the vicinity of the Children's Mansion in East Heights west along Highway 78 to the Town Creek bottom, an area of Ruston, Cahaba, and Ora soils has been cut, and the soil material used to construct a wide levee across Town Creek bottom.

Areas of Urban land, too small to map, are throughout the county. (Not in a capability class, woodland suitability group, or wildlife suitability group)

Use and Management of Soils

The use and management of the soils of Lee County for crops, pasture, woodland, recreation, wildlife, and engineering are discussed in this section. This section explains the management of soils and gives the estimated yields of the principal crops grown. This section also explains how soils can be managed for woodland and wildlife.

Management of Soils for Crops and Pasture [2]

Using the soils for cultivated crops reduces the organic-matter content, leaches out plant nutrients, and increases the erosion hazard. Cropping systems are needed to maintain organic-matter content, to control erosion, and to increase the fertility of the soils.

Close-growing or sod crops and annual cover crops grown in sequence with row crops help to maintain the organic-matter content, control erosion, and build up the fertility of the soils. The length of time that cover is needed, in proportion to the length of time that a row crop is grown, depends on the type of soil, the slope, and the hazard of erosion.

Chemical fertilizer is beneficial to all cropland.

[2] T. R. TAYLOR, conservation agronomist, Soil Conservation Service, assisted in the preparation of this section.

Crop residue should be shredded after the harvest and left on the surface or disked into the surface layer of the soil if there is a hazard of flooding. The need for fertilizer varies from soil to soil and from crop to crop. Soil tests help to determine the correct amount and kind of fertilizer to add. Information can also be obtained from the local Extension Service office and from the Mississippi Agricultural Experiment Station.

On some soils in the county, such as those of the Marietta, Tuscumbia, and Una series, establishing surface and internal drainage is a problem. Drainage mains and laterals that have surface field drains leading to them are needed to solve this problem. Diversions are needed to protect the bottom lands from receiving excessive water from the hills. Contour cultivation is needed in gently sloping fields to control erosion and conserve moisture.

In using the soils for pasture, good, well-managed sods of grasses and legumes protect the soils from erosion, provide forage and feed for livestock, and build up the organic-matter content of the soils. A wide variety of grasses and legumes grow well on the soils of Lee County. It is a good practice to obtain help from the local Soil Conservation office regarding the better suited plants and combination of plants for a given soil. The type of livestock enterprise and the individual needs of the farmer should also be considered.

Perennial grasses that are suited to the soils are common bermudagrass, Coastal bermudagrass, bahiagrass, dallisgrass, and tall fescue. Legumes that are well suited are white clover, wild winter peas, annual lespedeza, and sericea lespedeza.

Regular applications of fertilizers and lime are profitable on all pastures. The amount and kind of fertilizer and the frequency of application should be determined by a soil test.

Grasses and legumes grow better and produce a larger amount of forage if grazing is controlled by proper stocking and rotation grazing.

Capability grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible, but unlikely, major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

The capability classification reflects much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forest trees or engineering.

In the capability system, all kinds of soil are grouped at three levels: the capability class, subclass, and unit. These are discussed in the following paragraphs.

Capability Classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use.

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Capability Subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c*, because the soils in Class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, woodland, wildlife food and cover, or recreation.

Capability Units are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-1 or IIIe-3. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

The following is a descriptive list of the capability units, classes, and subclasses in Lee County.

Class I soils have few limitations that restrict their use. (None in Lee County)

Class II soils have some limitations that reduce the choice of plants or that require moderate conservation practices.

- Subclass IIe soils are subject to moderate erosion if they are not protected.
  - Unit IIe-1 soils are moderately well drained, have a fragipan or clayey subsoil, and have slopes of 2 to 5 percent.
- Subclass IIw soils have moderate limitations because of excess water.
  - Unit IIw-1 soils are moderately well drained, have a fragipan or clayey subsoil, and have slopes of 0 to 2 percent.
  - Unit IIw-2 soils are somewhat poorly drained to moderately well drained, are nonacid, have a clayey subsoil, and are on flood plains.
  - Unit IIw-3 soils are somewhat poorly drained to well drained, are nonacid, and are on flood plains.
  - Unit IIw-4 soils are somewhat poorly drained, are acid, and are on flood plains.
  - Unit IIw-5 soils are somewhat poorly drained, have a clayey subsoil, and have slopes of 0 to 2 percent.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Subclass IIIe soils are subject to severe erosion if cultivated and not protected.

Unit IIIe–1 soils are moderately well drained, have a fragipan or clayey subsoil, and have slopes of 5 to 8 percent.

Unit IIIe–2 soils are moderately well drained to well drained, have a clayey subsoil, and have slopes of 2 to 5 percent.

Unit IIIe–3 soils are well drained and have slopes of 5 to 8 percent.

Subclass IIIw soils have severe limitations because of excess water.

Unit IIIw–1 soils are poorly drained, are nonacid, have a clayey subsoil, and are on flood plains.

Unit IIIw–2 soils are somewhat poorly drained, have a fragipan or clayey subsoil, and have slopes of 0 to 2 percent.

Class IV soils have very severe limitations that restrict the choice of plants, require very careful management, or both.

Subclass IVe soils are subject to severe erosion if cultivated and not protected.

Unit IVe–1 soils are well drained and have slopes of 8 to 12 percent.

Unit IVe–2 soils are moderately well drained to well drained, have a clayey subsoil, and have slopes of 2 to 8 percent. The soils that have slopes of 2 to 5 percent are severely eroded.

Subclass IVw soils have very severe limitations for cultivation because of excess water.

Unit IVw–1 soils are poorly drained and have slopes of 0 to 2 percent.

Class V soils are not erodible, but have other limitations impractical to remove, that limit their use largely to pasture, woodland, or wildlife food and cover. (None in Lee County)

Class VI soils have severe limitations that make them unsuitable for cultivation and that limit their use largely to pasture, woodland, or wildlife food and cover.

Subclass VIe soils are very severely limited by risk of erosion if protective cover is not maintained.

Unit VIe–1 soils are moderately well drained, are severely eroded, and have slopes of 5 to 17 percent.

Unit VIe–2 soils are well drained, eroded, and alkaline and have slopes of 5 to 12 percent.

Unit VIe–3 soils are moderately well drained, are severely eroded, have a fragipan, and have slopes of 8 to 12 percent.

Unit VIe–4 soils are well drained, are eroded, and have slopes of 12 to 17 percent.

Class VII soils have very severe limitations that make them unsuitable for cultivation without major reclamation and restrict their use largely to pasture, woodland, or wildlife food and cover.

Subclass VIIe soils are very severely limited, chiefly by risk of erosion, if protective cover is not maintained.

Unit VIIe–1 soils are well drained and have slopes of 17 to 30 percent.

Unit VIIe–2 soils are acid and have been altered by very severe gullies.

Unit VIIe–3 soils are alkaline and have been altered by very severe gullies.

Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, water supply, or to esthetic purposes. (None in Lee County)

Estimated yields

The soils of Lee County vary widely in productivity. Some soils consistently produce high yields of cultivated crops, and others are better suited to less intensive use.

Table 2 gives estimated average yields per acre of commonly grown crops under high level management but not irrigated. The yields obtained are based on estimates by agronomists, soil scientists, and others who have had experience with the crops and the soils of this county. Data on yields obtained in experiments were adjusted to reflect the combined influence of slope and management. If such data were not available, estimates were made using available information for similar soils.

The following practices of high level management were assumed in estimating the yields: (1) fertilizer and lime applied according to the results of soil tests, (2) proper tillage and use of crop residue, (3) planting of suitable varieties, (4) use of soil-conserving cropping systems, and (5) other conservation practices used to improve production.

Estimates are not given for those soils that are unsuited to a specific crop. They are also not given for crops not commonly grown in the county or for crops grown only on a small acreage.

Use of Soils for Woodland [3]

This section contains information that can be used by woodland owners, foresters, and farmers in developing and carrying out plans for profitable tree farming.

In addition to being a reservoir of moisture for a tree, soil provides all the essential elements required for growth except those derived from the atmosphere, carbon from carbon dioxide, and oxygen. Soil characteristics, such as chemical composition, texture, structure, depth, and position, affect the growth of a tree to the extent to which they affect the supply of moisture and nutrients.

Several studies have shown strong correlations between productivity of site, or growth of trees, and various soil characteristics, such as depth and position on the slope. In many places the relationships are indirect.

The available water capacity and the supply of nutrients in a soil are strongly related to the texture and structure, as well as to its depth. Coarse-textured soils are low in nutrient content and low in available water capacity. Fine-textured soils may be high in nutrient content and have high available water capacity. Aeration is impeded in heavy clay, particularly if the soil is wet, so that metabolic processes that require oxygen in the roots are inhibited. In clayey soils the percolation of

[3] JOSEPH V. ZARY, forester, assisted in preparing this section.

TABLE 2.—*Estimated average yields per acre of principal crops under a high level of management*

[Absence of yield figure indicates crop is not commonly grown on the particular soil]

Soil [1]	Cotton lint	Corn	Soy-beans	Oats	Pasture: Common bermudagrass and legumes	Pasture: Bahiagrass and legumes	Pasture: Fescue and legumes
	Lb.	*Bu.*	*Bu.*	*Bu.*	*Cow-acre-days* [2]	*Cow-acre-days* [2]	*Cow-acre-days* [2]
Arkabutla loam	700	80	40	70	290	330	340
Cahaba and Ruston fine sandy loams, 5 to 8 percent slopes, eroded	675	75	30	65	250	325	300
Cahaba and Ruston fine sandy loams, 12 to 17 percent slopes, eroded					200	260	
Cahaba and Ruston fine sandy loams, 17 to 30 percent slopes					140	200	
Catalpa silty clay loam	750	80	40	75	280		320
Commerce silt loam	850	90	45	70	290		340
Demopolis silty clay loam, 5 to 12 percent slopes, severely eroded					80		125
Falkner silt loam, 0 to 2 percent slopes	600	60	35	55	230	280	290
Kinston fine sandy loam		50	30		240	280	270
Kipling silt loam, 0 to 2 percent slopes	500	55	35	55	240	280	220
Leeper fine sandy loam	750	80	40	75	275		310
Leeper silty clay loam	750	80	40	75	275		310
Luverne fine sandy loam, 5 to 8 percent slopes, eroded	550	60	25	60	210	240	260
Luverne fine sandy loam, 8 to 12 percent slopes, eroded					200	165	
Luverne and Cahaba soils, 17 to 30 percent slopes					140	120	
Luverne and Ruston soils, 12 to 17 percent slopes, eroded					200	165	
Mantachie fine sandy loam	700	85	40	55	285	320	335
Marietta loam	750	85	40	55	290	325	340
Mashulaville fine sandy loam			20		200	210	220
Mashulaville silt loam			20		200	210	220
Myatt fine sandy loam			25		200	210	210
Oktibbeha silty clay loam, 2 to 5 percent slopes, eroded	550	50	30	55	240	280	280
Oktibbeha silty clay loam, 5 to 8 percent slopes, eroded	450	50	25	55	235	275	270
Oktibbeha silty clay, 2 to 5 percent slopes, severely eroded	450		25	50	200	270	265
Oktibbeha silty clay, 5 to 12 percent slopes, severely eroded					180	200	200
Oktibbeha and Sumter soils, 8 to 17 percent slopes, severely eroded					175	190	200
Ora fine sandy loam, 2 to 5 percent slopes, eroded	700	75	30	80	210	270	240
Ora fine sandy loam, 5 to 8 percent slopes, eroded	600	70	25	70	200	260	235
Ora fine sandy loam, 8 to 12 percent slopes, severely eroded					180	230	
Prentiss fine sandy loam, 0 to 2 percent slopes	700	75	30	80	240	290	240
Prentiss fine sandy loam, 2 to 5 percent slopes, eroded	700	65	30	80	240	290	240
Providence silt loam, 2 to 5 percent slopes	700	80	35	80	240	290	240
Providence silt loam, 2 to 5 percent slopes, eroded	700	80	35	80	240	290	240
Providence silt loam, 5 to 8 percent slopes, eroded	575	70	30	70	230	280	235
Providence silt loam, heavy substratum, 2 to 5 percent slopes, eroded	700	80	35	70	240	290	240
Providence silt loam, heavy substratum, 5 to 8 percent slopes, eroded	550	70	30	60	230	280	235
Quitman silt loam, 0 to 2 percent slopes	600	60	20	55	260	190	230
Robinsonville soils	750	90	30	65	285	320	325
Savannah fine sandy loam, 0 to 2 percent slopes	700	75	30	80	240	290	240
Savannah fine sandy loam, 2 to 5 percent slopes	700	75	30	80	240	290	240
Sumter silty clay, 5 to 12 percent slopes, eroded					190		250
Tippah silt loam, 0 to 2 percent slopes	650	75	30	70	240	290	240
Tippah silt loam, 2 to 5 percent slopes, eroded	650	75	30	70	240	290	240
Tippah silt loam, 5 to 8 percent slopes	600	70	25	65	235	285	235
Tuscumbia silty clay loam			30		220		275
Una silty clay			25		220		275

[1] Only soils generally used for crops and pasture are included in this table.

[2] Cow-acre-days is the number of days in a year that one animal unit (1 cow, 1 steer, or 1 horse; 5 hogs; 7 sheep; or 7 goats) can graze 1 acre without damage to the pasture.

water and soil aeration are favored by aggregated soil particles rather than by plasticity or cemented layers. Silvicultural practices that prevent the destruction of organic matter and the compaction of soil will provide for better conditions of soil moisture and aeration (*11*).

Approximately 75,400 acres, or 26 percent of the total land area of 291,200 acres in Lee County, is presently classified as commercial forest. This acreage may be further divided into ownership classes, as follows: farmer-owned woodland, 40,300 acres; miscellaneous private, 34,700 acres, and other public land, 400 acres. Most of the farmer-owned commercial forest is in small areas less than 500 acres in size. The commercial forest classified as "miscellaneous private" is also typically in small tracts of less than 500 acres in size. This acreage is owned by businessmen, professional people, and absentee owners. The forest classified as "other public" includes Tombigbee State Park and small areas of the Natchez Trace Parkway. There are no large, corporate, wooded landholdings in the county.

The commercial forest may also be divided into forest types, which are groups or stands of trees of the same species growing under the same ecological and biological conditions. To a large extent, soils influence the nature, composition, and rate of growth of the trees. Forest types are named for the species that are present in the greatest abundance (*9*).

Following is a list showing forest types that occur in Lee County mainly in natural stands, and the acreages occupied by each:

	Acres
Hardwood types:	
Oak-hickory	29,000
Bottom-land hardwood (Oak-gum-cypress)	11,600
Total	40,600
Softwood types:	
Loblolly-shortleaf pine	11,600
Oak-pine	23,200
Total	34,800
Total hardwoods and softwoods	75,400

Oak-hickory forest.—This type is made up mainly of upland oaks and hickory in association with elm, maple, and yellow-poplar. It is in the northwestern and southwestern parts of the county, in a belt extending in an east-west direction through the entire central part of the county.

Bottom-land hardwood forest.—This type is made up chiefly of tupelo, blackgum, sweetgum, baldcypress, water oak, and willow oak. It occurs in small scattered stands in the lower reaches of Chiwapa, Coonewah, and Town Creeks in the southern part of the county, in the upper reaches of Camp and Mud Creeks in the northwestern part, and along Twentymile and Mantachie Creeks in the northeastern part of the county. Other minor hardwoods in these areas are such species as cottonwood, willow, ash, hackberry, elm, maple, sycamore, and beech. The bottomlands that once supported excellent hardwood stands have, for the most part, been cleared for crops.

The oak-pine forest.—This type is made up principally of upland oaks, loblolly pine, and shortleaf pine. It occupies the northeastern and southeastern parts of the county. Associated species include sweetgum, hickory, and yellow-poplar.

The loblolly-shortleaf pine forest.—This type is interspersed with the oak-pine forest type in the northeastern and southeastern parts of the county and, to a lesser extent, with the oak-hickory forest-type in the western part of the county (*6*).

In many places the two or more forest types overlap and intermingle. Typically, the oak-pine type is transitional between pure pine and the oak-hickory type.

The 1967 Forest Survey, conducted by the U.S. Forest Service, indicated that the volume of growing stock is 22.9 million cubic feet. This can be separated into hardwoods, which make up 18.7 million cubic feet, and softwoods, which make up 4.2 million cubic feet. The total volume of sawtimber, by International ¼-inch rule, is 42.9 million board feet, of which hardwoods make up 32.6 million board feet and softwoods 10.3 million board feet.

Of the 10.3 million board feet of softwood sawtimber, 7.0 million board feet was loblolly pine and 3.3 million board feet was shortleaf pine. The 32.6 million board feet of hardwood sawtimber included the following (*9, 13, 15*):

	Volume, million board feet, International ¼-inch rule
Species:	
Blackgum, swamp tupelo	2.2
Hickories, except pecan	12.0
White oak	6.7
Cherrybark, Shumard, and northern red oaks	3.4
Black, scarlet, and southern red oaks	3.1
Water oaks	2.5
Ash	1.2
Sycamore	1.1
Swamp chestnut oak	0.4
Total	32.6

Wood-using industries

Much of the land in Lee County is suitable for more profitable uses than woodland. Because of the relatively small woodland acreage and the limited volume of timber available, wood-using industries are not of major importance. In 1966 one small sawmill, which operated near Mooreville, processed less than 3 million board feet per year (*14*).

A total of only 1,020,000 board feet of sawlogs was produced in 1966. This total included 816,000 board feet of hardwoods and 204,000 board feet of softwoods. No veneer-logs, poles, or pilings are currently produced in the county. A limited quantity of cedar and black-locust posts are produced for local, on-the-farm use. One plant near Cedar Hill manufactures hardwood furniture frames, and one small factory in Tupelo manufactures children's toys and beds from hardwoods, mainly cottonwood and sycamore.

In 1966, Lee County produced a total of 3,145 standard cords of round pulpwood, which was trucked to shipping points in Prentiss County to the north and Itawamba County to the east. There are no pulpwood yards in Lee County.

In addition to these uses, which provided employment to a limited number of workers, the woodlands of Lee County provide habitat and food for wildlife and offer opportunity for sport and recreation to many users.

Woodland suitability groups

To assist owners of woodland and others in planning the management of woodland and in setting priorities for treatment, the soils of Lee County have been placed in woodland suitability groups. Each group is made up of soils that have about the same suitability for wood crops, that require about the same management, and that have about the same potential productivity. Shown in table 3 are each of these groups and the map symbols of the soils in each group.

Potential productivity, expressed as site index, is shown in table 3. Site index is the average height, in feet, of dominant and codominant trees at 50 years of age for all species, but for cottonwood, it is the average height at 30 years of age. Site indexes are recorded for the most important tree species that commonly grow on the soils of each woodland suitability group. They are based on soil-woodland correlation studies and available research data (*3*, *12*).

As shown in table 3, each woodland suitability group has, in varying degree, limitations that affect its management. These limitations are expressed as slight, moderate, or severe.

Erosion hazard is rated on the basis of the risk of erosion to be expected on well-managed woodland. These ratings are affected by soil stability and permeability, slope, surface runoff, available water capacity, and disturbances of vegetation.

Equipment restriction was rated on the basis of the soil characteristics that limit or prohibit the use of equipment commonly used in woods operations, such as felling, bucking, skidding, loading, and hauling. Consideration was also given to special equipment used in spraying, tree planting, direct seeding, and fire-fighting. Ratings are based on such physical soil characteristics as texture, stability, plasticity, and abrasiveness, as well as on slope, wetness, and the number or lack of stones, ledges, and other obstructions.

Seedling mortality or regeneration potential refers to the failure of tree seedlings to survive and grow, primarily because the soil or topography is unfavorable. It is assumed that plant competition and rainfall are not limiting factors. The term, "tree seedlings," includes (1) natural regeneration, (2) direct seeding, and (3) planted seedlings. In each of these three methods of regeneration it is assumed that the seedlings initially established are of species well suited to the soil and total site.

A woodland suitability group is made up of kinds of soil that are capable of producing similar kinds of wood crops, that need the same management, and that have about the same potential productivity. The numbering system and the suitability group symbols are explained in the following paragraphs.

The first element of the group symbol is a numeral that indicates the woodland suitability class. This numeral expresses site quality, which ranges from 1 to 4, and is based on the average site index of one or more indicator forest types or tree species. Soils in class 1 have the highest potential productivity, followed by those in class 2, 3, and 4. The indicator species are shown in italics in table 3.

The second element in the symbol is a small letter that indicates the suitability subclass. This letter indicates the selected soil properties that result in moderate to severe hazards or limitations in woodland use or management.

Subclass w (excessive wetness).—Soils in which excessive water, either seasonally or year around, causes significant limitations for woodland use or management. These soils have restricted drainage, high water table, or flooding that adversely affect either stand development or management.

Subclass d (restricted rooting depth).—Soils that have restrictions or limitations for woodland use or management because the soils are shallow to hard rock, hardpan, or other layers that restrict the growth of roots.

Subclass c (clayey soils).—Soils having restrictions or limitations for woodland use or management because of the kind or amount of clay in the upper part of the soil profile.

Subclass o (slight or no limitations).—Soils that have no significant restrictions or limitations for woodland use or management.

Some kinds of soil may have more than one set of subclass characteristics. Priority in placing each kind of soil into a subclass is in the order w, d, c, and o.

The third element of the symbol is a numeral that indicates the degree of hazard or limitation and the general suitability of the soils for certain kinds of trees. The three management problems considered are (1) erosion hazard, (2) equipment restrictions, and (3) seedling mortality.

The numeral 1 indicates soils that have none to slight management limitations and that are well suited to needleleaf trees.

The numeral 2 indicates soils that have one or more moderate management limitations and that are well suited to needleleaf trees.

The numeral 3 indicates soils that have one or more severe management limitations and that are well suited to needleleaf trees.

The numeral 4 indicates soils that have none to slight management limitations and that are well suited to broadleaf trees.

The numeral 5 indicates soils that have one or more moderate management limitations and that are well suited to broadleaf trees.

The numeral 6 indicates soils that have one or more severe management limitations and that are well suited to broadleaf trees.

The numeral 7 indicates soils that have none to slight management limitations and that are suited to either needleleaf or broadleaf trees.

The numeral 8 indicates soils that have one or more moderate management limitations and that are suited to either needleleaf or broadleaf trees.

The numeral 9 indicates soils that have one or more severe management limitations and that are suited to either needleleaf or broadleaf trees.

TABLE 3.—*Soils rated for woodland use*

[Gullied land and Urban land are not rated, because their properties are too variable]

Woodland suitability group	Soil	Potential productivity			Hazards and limitations			Species suitable for planting
		Tree species [1]	Average site index and standard deviation [2]	Range of site index	Erosion hazard	Equipment restrictions	Seedling mortality	
Group 1o4: Well-drained soils on flood plains. Moderate permeability; medium available water capacity.	Robinsonville: Ro.	Green ash	87	80–102	Slight	Moderate	Slight	Green ash, cottonwood, sweetgum, and sycamore.
		Cottonwood	107±8	87–122				
		American elm						
		Slippery elm						
		Hackberry						
		Sugarberry						
		Silver maple						
		Sweetgum	109	92–118				
		Sycamore						
		Black willow						
Group 1w5: Somewhat poorly drained and moderately well drained soils on flood plains. Very slow to moderately slow permeability; high and very high available water capacity.	Catalpa: Cp.	Green ash	101	79–106	Slight	Moderate	Moderate	Cottonwood, sweetgum, and sycamore.
		Cottonwood	[3] 108	88–118				
		American elm						
		Slippery elm						
		Hackberry						
		Sweetgum	[3] 100	88–107				
		Sycamore						
	Commerce: Cr.	Green ash	80	58–95	Slight	Moderate	Slight	Green ash, cottonwood, Nuttall oak, water oak, and sycamore.
		Baldcypress						
		Cottonwood	119±10	99–134				
		American elm						
		Slippery elm						
		Hackberry						
		Sugarberry						
		Silver maple						
		Nuttall oak	90	78–97				
		Water oak	109	97–116				
		Persimmon						
		Sycamore						
		Black willow						
	Marietta: Mr.	Green ash		80–100	Slight	Moderate	Moderate	Cottonwood, sweetgum, sycamore, and yellow-poplar.
		Cottonwood		90–110				
		American elm						
		Slippery elm						
		Hackberry						
		Red oaks						
		White oaks						
		Sweetgum		90–105				
		Sycamore						
		Yellow-poplar						
Group 1w6: Somewhat poorly drained soils on flood plains. Permeability is very slow. Available water capacity is high.	Leeper: Le, Lp.	Green ash	94	72–99	Slight	Severe	Severe	Green ash, cottonwood, sweetgum, and sycamore.
		Cottonwood	110	85–115				
		American elm						
		Slippery elm						
		Hackberry						
		Sweetgum	95	90–105				
		Sycamore						

Group 1w9: Somewhat poorly drained soils on flood plains. Permeability is moderate. Available water capacity is very high and high.	Arkabutla: Ar.	Green ash	93±5	71–105	Slight	Severe	Moderate	Green ash, cottonwood, cherrybark oak, Nuttall oak, Shumard oak, swamp chestnut oak, water oak, willow oak, loblolly pine, sweetgum, sycamore, and yellow-popular.
		Baldcypress						
		Cottonwood	108±11	88–118				
		American elm						
		Slippery elm						
		Hackberry						
		Honeylocust						
		Red maple						
		Cherrybark oak	99±8	87–104				
		Laurel oak						
		Nuttall oak	107±8	95–114				
		Overcup oak						
		Water oak	97±8	85–104				
		White oak						
		Willow oak	99±7	89–103				
		Persimmon						
		Loblolly pine	[3] 93	86–100				
		Sweetgum	98±7	86–105				
	Mantachie: Ma.	Green ash	88±10	66–93	Slight	Severe	Moderate	Green ash, cottonwood, cherrybark oak, Nuttall oak, Shumard oak, swamp chestnut oak, loblolly pine, sweetgum, sycamore, and yellow-poplar.
		Cottonwood	92	72–102				
		Hackberry						
		Cherrybark oak	101±4	89–106				
		Nuttall oak		99–111				
		Shumard oak						
		Southern red oak						
		Swamp chestnut oak						
		Water oak	94±5	82–101				
		White oak						
		Willow oak	96±6	86–100				
		Loblolly pine	98±7	90–106				
		Sweetgum	100±6	88–107				
		Sycamore						
		Black tupelo						
		Black walnut						
		Yellow-poplar						
Group 2w6: Poorly drained soils on flood plains. Permeability is very slow. Available water capacity is high.	Tuscumbia: Tu.	Green ash		85–105	Slight	Moderate	Severe	Green ash, cottonwood, sweetgum, and sycamore.
		Cottonwood		90–105				
		American elm						
		Slippery elm						
		Hackberry						
		Red oaks						
		White oaks						
		Sweetgum		80–90				
		Sycamore						
	Una: Un.	Green ash	94±3	72–106	Slight	Moderate	Severe	Green ash, cottonwood, Nuttall oak, sweetgum, sycamore, and water tupelo.
		Cottonwood	[3] 90	80–100				
		Hackberry						
		Cherrybark oak						
		Overcup oak						
		Water oak						
		Willow oak						
		Persimmon						
		Sweetgum	101±8	87–103				
		Water tupelo						
		Sycamore						

See footnotes at end of table.

TABLE 3.—*Soils rated for woodland use*—Continued

[Gullied land and Urban land are not rated, because their properties are too variable]

Woodland suitability group	Soil	Potential productivity: Tree species [1]	Average site index and standard deviation [2]	Range of site index	Hazards and limitations: Erosion hazard	Equipment restrictions	Seedling mortality	Species suitable for planting
Group 2w8: Somewhat poorly drained, nearly level soils on uplands. Permeability is slow and moderately slow. Available water capacity is very high to medium.	Falkner: FaA.	Cherrybark oak		80–100	Slight	Moderate	Slight	Cherrybark oak, Shumard oak, water oak, loblolly pine, shortleaf pine, and sweetgum.
		Swamp chestnut oak						
		Water oak		70–90				
		White oak						
		Loblolly pine	86±5					
		Shortleaf pine	76					
		Sweetgum	88	80–95				
		Sycamore						
		Yellow-popular						
	Quitman: QuA.	Cherrybark oak		80–100	Slight	Moderate	Slight	Cherrybark oak, Shumard oak, and loblolly pine.
		Water oak		80–100				
		White oaks						
		Loblolly pine	93±4	86–98				
		Sweetgum		80–100				
Group 2w9: Poorly drained, nearly level soils. Permeability is moderate and slow. Available water capacity is medium and high.	Kinston: Kn.	Green ash	86±12	64–98	Slight	Severe	Severe	Green ash, cottonwood, cherrybark oak, Nuttall oak, loblolly pine, sweetgum, sycamore, and yellow-poplar.
		Cottonwood	100	80–110				
		Cherrybark oak	95±6	83–100				
		Water oak	90±10	78–97				
		White oaks						
		Willow oak	91±8	81–95				
		Loblolly pine	92±7	80–97				
		Shortleaf pine						
		Sweetgum	90±9	78–97				
		Sycamore						
		Tupelos						
		Yellow-poplar						
	Myatt: My.	Cherrybark oak	86	71–93	Slight	Severe	Severe	Shumard oak, swamp chestnut oak, loblolly pine, sweetgum, and yellow-poplar.
		Shumard oak						
		Southern red oak						
		Swamp chestnut oak						
		Water oak	86	71–93				
		White oaks						
		Willow oak	74	70–80				
		Loblolly pine	95±6	88–102				
		Sweetgum	92	77–99				
		Sycamore						
		Black tupelo						
		Yellow-poplar						
Group 2c8: Somewhat poorly drained, nearly level soils on uplands. Permeability is slow or very slow. Available water capacity is high.	Kipling: KpA.	Cherrybark oak	90	80–100	Slight	Moderate	Moderate	Cherrybark oak, Shumard oak, loblolly pine, and sweetgum.
		Durand oak						
		Shumard oak						
		Water oak						
		White oak						
		Loblolly pine	90	80–100				
		Sweetgum	90	80–100				

Group 3o1: Well-drained, rolling and hilly soils on uplands. Permeability is moderate. Available water capacity is medium.	Cahaba and Ruston: CaC2, CaE2, CaF, Cahaba part of LuF, and Ruston part of LvE2.	Loblolly pine	82	75–86	Slight	Slight	Slight	Loblolly pine and shortleaf pine.
		Shortleaf pine	66	60–74				
Group 3o7: Moderately well drained soils on uplands. Permeability is moderately slow to slow. Available water capacity is medium to high.	Savannah: SaA, SaB.	Southern red oak	75	70–80	Slight	Slight	Slight	Loblolly pine and shortleaf pine.
		Loblolly pine	81±5	75–86				
		Shortleaf pine	76±4	70–81				
		Sweetgum	[3] 80	75–85				
	Ora: OrB2, OrC2, OrD3.	*Loblolly pine*	83±5	76–89	Slight	Slight	Slight	Loblolly pine and shortleaf pine.
		Shortleaf pine	69±6	63–76				
		Sweetgum	[3] 80	75–85				
	Prentiss: PrA, PrB2.	Red oaks			Slight	Slight	Slight	Cherrybark oak, loblolly pine, and shortleaf pine.
		White oaks						
		Loblolly pine	88	83–96				
		Shortleaf pine	79	75–85				
		Sweetgum		80–95				
	Providence:[4] PsB, PsB2, PsC2, PtB2, PtC2.	Cherrybark oak	[3] 95	85–105	Slight	Slight	Slight	Cherrybark oak, Shumard oak, swamp chestnut oa , loblolly pine, shortleaf pine, sweetgum, and yellow-poplar.
		Shumard oak						
		Swamp chestnut oak						
		Water oak		70–85				
		White oak						
		Loblolly pine	84±10	73–95				
		Shortleaf pine	64±7	58–73				
		Sweetgum	90	80–100				
		Sycamore						
	Tippah: ThA, ThB2, ThC.	American basswood			Slight	Slight	Slight	Cherrybark oak, Shumard oak, swamp chestnut oak, water oak, loblolly pine, shortleaf pine, sweetgum, and yellow-poplar.
		Cherrybark oak	[3] 90	80–100				
		Water oak	[3] 80	70–90				
		White oak						
		Loblolly pine	[3] 78	70–85				
		Shortleaf pine	63±7	55–71				
		Sweetgum	[3] 90	80–100				
		Sycamore						
Group 3w9: Poorly drained, nearly level soils on uplands. Permeability is slow. Available water capacity is medium.	Mashulaville: Ms, Mt.	Shumard oak			Slight	Severe	Severe	Shumard oak, loblolly pine, and sweetgum.
		Water oak		65–80				
		White oaks						
		Loblolly pine	85	80–90				
		Sweetgum		70–85				
Group 3c2: Well-drained, hilly soils on uplands. Permeability is moderate and moderately slow. Available water capacity is medium and high.	Luverne: LrC2, LrD2, and Luverne parts of LuF and LvE2.	*Loblolly pine*	83	76–88	Slight to moderate.	Moderate	Slight	Loblolly pine and shortleaf pine.
		Shortleaf pine	73	67–78				
Group 3c8: Moderately well drained and well drained soils on uplands. Permeability is slow and very slow. Available water capacity is medium and high.	Oktibbeha: ObB2, ObC2, OhB3, OhD3 and Oktibbeha part of OkE3.	Southern red oak	[3] 70	65–75	Slight	Moderate	Moderate	Loblolly pine and eastern redcedar.
		Loblolly pine	76±5	69–82				
		Shortleaf pine	66±4	60–72				
		Eastern redcedar	45	40–50				

See footnotes at end of table.

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TABLE 3.—*Soils rated for woodland use*—Continued

[Gullied land and Urban land are not rated, because their properties are too variable]

Woodland suitability group	Soil	Potential productivity			Hazards and limitations			Species suitable or planting
		Tree species [1]	Average site index and standard deviation [2]	Range of site index	Erosion hazard	Equipment restrictions	Seedling mortality	
Group 4c2c: Well-drained soils on uplands. Permeability is slow. Available water capacity is medium.	Sumter: SuD2, and Sumter part of OkE3.	Eastern redcedar Osage-orange	37±5 ----------	32–45 --------	Moderate	Moderate	Moderate	Eastern redcedar.
Group 4d3c: Well-drained soils that are shallow to chalk; on uplands. Permeability is moderate. Available water capacity is low.	Demopolis: DeD3.	Eastern redcedar	40	35–45	Moderate to severe.	Moderate to severe.	Severe	Eastern redcedar.

[1] Information for broadleaf trees developed by WALTER M. BROADFOOT, Southern Hardwoods Laboratory, Southern Forest Experiment Station, U.S. Forest Service, Stoneville, Mississippi. Indicator species are in italics.

[2] Site index is the average height in feet of dominant and codominant trees at 50 years of age for all species except cottonwood. For cottonwood, it is the average height at 30 years of age.

[3] Estimated site index based on a similar soil or another species on the same soil.

[4] Not suitable for hardwoods if the soil is eroded to the degree that less than 6 inches of topsoil remains.

Use of Soils for Wildlife [4]

The kinds and numbers of wild animals that inhabit any given area are there because their requirements for existence are present. These requirements generally are an adequate year-round food supply, cover for protection from enemies and weather, and for most of them a water supply. Also, these requirements must be present in a particular pattern or relationship that suits each animal. If we take away one of these requirements or alter the arrangement of them, we create a limiting factor that can reduce or even eliminate certain wild animals from the area.

Each kind of animal has somewhat different needs, but good conditions for several kinds can usually be met on the same site. Collectively, these animal requirements and their arrangement on the land is called habitat. Animal habitat is dependent upon soil conditions, on land use, and on temperature, moisture, and other climatic features.

In order to relate animals to any particular soil, we must do it through that soil's ability to produce the habitat conditions necessary. Since animals are dependent upon plant life, either directly or indirectly, a soil's ability to produce a variety of plant life is important. A diet balanced in nutrients and minerals is necessary, and soil is an important factor. The soil's ability to hold water in either natural or manmade impoundments is significant to wildlife populations. So the general quality of wildlife habitat, that in turn governs the numbers and kinds of wild animals present, can be related directly to soil.

This section deals with a soil's potential for producing plant associations that support a certain kind of wildlife. Continuous changes take place naturally in vegetative patterns because competition among plants is severe. As several kinds of plants invade naturally or are introduced into an area, some become dominant and choke others out. The kind of soil usually dictates the plant species that become dominant. The way man uses land, regardless of the soil's potential, will drastically affect plant associations and thereby the kind and number of wild animals present. So wildlife habitat requires planning, management, and maintenance. Detailed planning assistance is available through the local office of the Soil Conservation Service.

The soils of Lee County have been placed in six wildlife suitability groups. These soils were grouped according to their potential to produce food and cover for wildlife habitat. In table 4 each of these wildlife suitability groups is rated for elements of wildlife habitat and for three classes of wildlife. These ratings are general and are intended as a guide for planning and selection of areas for various types of wildlife management. The ratings refer only to the suitability of the soils within a group and do not take into consideration the land use or any other factors that may affect wildlife populations. Given the opportunity through establishment and maintenance, plant associations necessary for various kinds of wildlife can be planned in areas so rated in table 4.

[4] EDWARD G. SULLIVAN, biologist, Soil Conservation Service, prepared this section.

The meanings of the ratings in the table are as follows: *Well suited* means that plant associations that make up favorable wildlife habitat are easily created, improved, and maintained by either native or planted vegetation, that there are few or no limitations, and that satisfactory results can be expected. *Suited* means that good wildlife habitat can be created, improved, and maintained in most places, that there may be moderate limitations, and that frequent attention may be necessary for good results. *Poorly suited* indicates that wildlife habitat can be created and maintained in some places, that there may be severe limitations generally, that maintenance and management could be expensive, and that results may be unpredictable. *Unsuited* means that it is generally impractical to create or maintain wildlife habitat that will produce satisfactory results.

Elements of wildlife habitat

Grain and seed crops are seed-producing annual plants that are choice wildlife foods. Examples are corn, sorghums, millets, cowpeas, wheat, oats, and soybeans.

Grasses and legumes are domestic plants that furnish choice wildlife food, cover, or both. Examples of such grasses are bahiagrass, ryegrass, fescue, and panicgrass. Legumes include clovers, annual lespedezas, and bush lespedezas.

Wild herbaceous plants are native or introduced grasses, forbs, or weeds that provide food and cover for wildlife. Examples are beggarweed, perennial lespedezas, wild beans, ragweeds, and partridge peas.

Hardwood trees and shrubs are trees, shrubs, and vines that produce the fruits, nuts, buds, or browse used by wildlife. In most places these trees and shrubs are native, but in some places they have been planted. Examples are oak, hickory, beech, wild cherry, mulberry, dogwood, maple, grapes, greenbrier, and viburnums.

Needleleaf trees are cone-bearing trees that may furnish cover or food in the form of seed. Examples are pine and redcedar.

Wetland food and cover plants are wild or introduced plants that are suited to wet sites and that furnish food and cover primarily for wetland wildlife (ducks, geese, snipe, and others). Examples are smartweed, Japanese millet, rushes, sedges, and panicgrass.

Shallow water developments are limited to areas where low dikes and water-control structures can be built to create a habitat for wetland wildlife (fig. 9). A water supply is necessary. Planted or native vegetation, including bottom land hardwood trees, are the food sources.

Kinds of wildlife

Wildlife species are placed in three broad categories. This placement depends upon the main habitat requirements. For example, placing a species in the category "openland" does not mean that the animal is limited entirely to open land, but that most of its home range is open land and that open land is essential for its livelihood.

Openland wildlife includes bobwhite quail, cottontail rabbit, mourning dove, and several kinds of songbirds that spend most of their time in cropland, pasture, meadows, and other open and semiopen areas.

TABLE 4.—*Suitability of soils for*

Wildlife suitability group and soil symbol	Elements of wildlife habitat		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants
Group 1: Poorly drained to well drained soils on flood plains. Very slow to moderate permeability; medium to very high available water capacity. (Cp, Cr, Le, Lp, Mr, Ro, and Tu).	Well suited	Well suited	Well suited
Group 2: Poorly drained to somewhat poorly drained, nearly level soils. Very slow to moderate permeability; medium to very high available water capacity. (Ar, FaA, Kn, Ma, Ms, Mt, My, QuA, Un)	Suited to well suited.	Suited	Suited to well suited.
Group 3: Somewhat poorly drained to moderately well drained, nearly level soils on uplands. Very slow to slow permeability; high to medium available water capacity. (KpA, PrA, SaA, ThA)	Well suited	Well suited	Well suited
Group 4: Moderately well drained and well drained soils on uplands. Moderate to slow permeability; medium to high available water capacity. (CaC2, LrC2, LrD2, ObB2, ObC2, OhB3, OhD3, OrB2, OrC2, OrD3, PrB2, PsB, PsB2, PsC2, PtB2, PtC2, SaB, ThB2, ThC)	Suited to well suited.	Suited to well suited.	Well suited
Group 5: Well-drained, rolling and hilly soils on uplands. Moderate to moderately slow permeability; medium to high available water capacity. (CaE2, CaF, LuF, LvE2)	Poorly suited	Suited to poorly suited.	Well suited
Group 6: Moderately well drained soils and severely gullied areas on hilly uplands. Moderate to very slow permeability; available water capacity low to high. (DeD3, GdE, GoE, OkE3, and SuD2)	Suited to poorly suited.	Suited to poorly suited.	Suited

***Figure 9.*—Fishing and hunting lake built on Marietta loam, which is in wildlife suitability group 1.**

Woodland wildlife includes squirrels, deer, wild turkeys, woodcock, raccoon, and songbirds that spend most of their lives in or near wooded areas.

Wetland wildlife includes ducks, geese, rail, herons, shorebirds, mink, and muskrat that need mainly an aquatic habitat.

Use of Soils in Engineering [5]

This section deals with soils as construction material. It explains the physical and chemical properties of the soils as they affect the design and construction of highways, the installation of conservation measures and sanitation facilities, and many other structures.

Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, pipelines, building foundations, water storage facilities, erosion control structures, drainage, and sewage disposal systems. Among the soil properties most important to the engineer are permeability, shear strength, consolidation characteristics, texture, soil drainage, shrink-swell characteristics, plasticity, and reaction. The depth to the water table, the depth to consolidated material, and the topography are also important. The information in this soil survey can be used to:

1. Make soil and land-use studies that will aid in selecting and developing industrial, business, residential, and recreational sites.
2. Assist in designing drainage and irrigation structures and in planning dams and other structures for soil and water conservation.
3. Make preliminary evaluations for soils and ground conditions that will aid in selecting sites for highways, airports, pipelines, and cables and in planning detailed investigations of the selected sites.
4. Locate probable sources of gravel, sand, and other construction materials.
5. Correlate performance of engineering structures with the soil materials and thus develop information that will be useful in designing and maintaining the structures.
6. Determine the suitability of soils for cross-country movement of vehicles and construction equipment.

[5] V. L. BYRD, agricultural engineer, assisted in preparation of this section.

wildlife habitat and kinds of wildlife

Elements of wildlife habitat—Continued				Kinds of wildlife		
Hardwood trees and shrubs	Needleleaf trees	Wetland food and cover plants	Shallow water developments	Openland	Woodland	Wetland
Well suited	Suited	Suited	Suited	Suited	Suited	Suited.
Well suited	Poorly suited	Suited	Suited	Well suited	Well suited	Suited.
Well suited	Poorly suited	Poorly suited	Poorly suited	Well suited	Well suited	Poorly suited.
Well suited	Poorly suited	Unsuited	Unsuited	Suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Unsuited	Suited	Well suited	Unsuited.
Suited	Suited	Unsuited	Unsuited	Suited	Poorly suited	Unsuited.

7. Supplement the information obtained from other published maps and reports and from aerial photographs for the purpose of making reports and soil maps that can be used by engineers.
8. Develop other preliminary estimates pertinent to construction in a particular area.

The information in this survey is generalized and should be used only in planning more detailed field surveys. The more detailed field survey will in turn be used to locate, design, and construct specific engineering structures. This information, however, does not eliminate need for further investigations at sites selected for engineering works, especially works that involve heavy loads or that require excavations to depths greater than those shown in the tables, generally depths greater than 6 feet. Also inspection of sites, especially the small ones, is needed because many delineated areas of a given soil mapping unit may contain small areas of other kinds of soil that have strongly contrasting properties and different suitabilities or limitations for soil engineering.

Many of the terms used in this survey have a special meaning to soil scientists and a different meaning to engineers. Most of the terms are defined in the Glossary at the end of this survey.

Most of the information in this section is given in tables 5, 6, and 7. Table 5 shows the depth to seasonal high water table and the estimated properties of soils. The USDA texture and the engineering classifications of the soils are also given in this table. In table 6 the suitability of the soils as a source of construction materials is rated, and the soil features that affect the location and construction of highways, dikes or levees, farm ponds, drainage systems, irrigation systems, terraces, waterways, and sewage lagoons are noted. In table 7 the test data for selected soils in Lee County are given.

Engineering classification systems

Two systems of classifying soils are in general use among engineers. One system is used by the American Association of State Highway Officials (AASHO) (*1*), and the other is the Unified system developed by the Department of Defense (*13*). Both are used in this survey and are explained in the following paragraphs.

Most highway engineers classify soil according to the AASHO system. This system is based on the field performance of soils that affect use in highway construction. In this classification, soils are placed in seven groups ranging from A–1 through A–7. In group A–1 are gravelly soils of high bearing capacity (the best soils for subgrades), and in group A–7 are clay soils having low strength when wet (the poorest soils for subgrades). The relative engineering value of the soils in each group is indicated by a group number index. This number indicates the behavior of soil materials in embankments, subgrades, and subbases. Group index numbers range from 0 for the best materials to 20 for the poorest.

The Unified system classification is based on identification of soils according to their texture and plasticity and their performance as construction materials. Soil materials are identified as coarse grained (8 classes), fine grained (6 classes), or highly organic. The estimated classification of all the soils is given in table 5.

Engineering properties of soils

In table 5 are estimates, by the major soil horizons, of important properties that affect the use of the soils in Lee County in engineering. These estimates are based on

TABLE 5.—*Estimated*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. Because no estimates

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	Classification: USDA texture
		Inches	
Arkabutla: Ar	15 to 30 inches for 2 to 6 months each year.	0–5	Loam
		5–48	Silty clay loam
*Cahaba: CaC2, CaE2, CaF. For properties of Ruston soils, refer to Ruston series.	More than 60 inches.	0–9	Fine sandy loam
		9–20	Sandy clay loam
		20–32	Sandy loam
		32–60	Sandy loam
Catalpa: Cp	15 to 30 inches for 1 to 2 months each year.	0–6	Silty clay loam
		6–60	Silty clay
Commerce: Cr	15 to 30 inches for 2 to 6 months each year.	0–18	Silt loam
		18–60	Silty clay loam
Demopolis: DeD3	More than 60 inches.	0–11	Silty clay loam
		11–44	Chalk
Falkner: FaA	15 to 30 inches for 2 to 6 months each year.	0–4	Silt loam
		4–28	Silty clay loam
		28–54	Silty clay
*Gullied land: GdE, GoE. Properties of Gullied land are too variable to be rated; for properties of Demopolis soil in GdE, refer to Demopolis series; for Ora soils in GoE, refer to Ora series.			
Kinston: Kn	0 to 15 inches for 2 to 6 months each year.	0–7	Fine sandy loam
		7–36	Loam, sandy clay loam
		36–42	Sandy loam
Kipling: KpA	15 to 30 inches for 2 to 6 months each year.	0–3	Silt loam
		3–60	Clay or silty clay
Leeper:			
Le	15 to 30 inches for 2 to 6 months each year.	0–6	Fine sandy loam
		6–9	Silty clay loam
		9–48	Silty clay to clay
Lp	15 to 30 inches for 2 to 6 months each year.	0–4	Silty clay loam
		4–50	Silty clay to clay
*Luverne: LrC2, LrD2, LuF, LvE2. For properties of Cahaba and Ruston soils in LuF and LvE2, refer to Cahaba and Ruston series.	More than 60 inches.	0–7	Fine sandy loam
		7–20	Sandy clay
		20–60	Sandy clay loam to clay loam.
Mantachie: Ma	15 to 30 inches for 2 to 6 months each year.	0–11	Fine sandy loam
		11–61	Loam
Marietta: Mr	15 to 30 inches for 2 to 6 months each year.	0–10	Loam to silt loam
		10–24	Silty clay loam to loam
		24–46	Sandy clay loam
		46–62	Sandy clay
Mashulaville: Ms, Mt	0 to 15 inches for 2 to 6 months each year.	0–23	Silt loam
		23–44	Silt loam
		44–63	Silty clay loam
Myatt: My	0 to 15 inches for 2 to 6 months each year.	0–26	Loam or fine sandy loam
		26–52	Clay loam
*Oktibbeha: ObB2, ObC2, OhB3, OhD3, OkE3. For properties of Sumter soils in OkE3, refer to Sumter series.	30 to 60 inches for 2 to 6 months each year.	0–41	Clay or silty clay
		41–48	Marly clay
		48–54	Chalk

engineering properties

these soils may have different properties and limitations, it is necessary to refer to other series as indicated. Dashes in columns mean tha t were made]

Classification—Continued		Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
Unified	AASHO	No. 10	No. 40	No. 200				
					Inches per hour	*Inches per inch of soil*	*pH*	
ML	A–4	100	85–95	60–70	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	Low.
CL	A–6	100	95–100	85–95	0. 63–2. 0	0. 20–0. 22	4. 5–5. 5	Low.
ML, SM	A–4	100	70–85	45–55	2. 0–6. 3	0. 10–0. 15	4. 5–5. 5	Low.
SC	A–6	100	80–90	35–50	0. 63–2. 0	0. 10–0. 16	4. 5–5. 5	Moderate.
SM–ML	A–4	100	65–75	45–55	0. 63–2. 0	0. 09–0. 13	4. 5–5. 5	Low.
SM	A–2, A–4	100	60–70	15–45	2. 0–6. 3	0. 06–0. 10	4. 5–5. 5	Low.
CL	A–6	100	95–100	85–95	0. 20–0. 63	0. 18–0. 21	6. 1–7. 8	Low.
CH	A–7	100	95–100	90–100	0. 06–0. 20	0. 18–0. 20	6. 1–7. 8	High.
ML	A–4	100	90–100	75–90	0. 63–2. 0	0. 20–0. 23	5. 5–7. 8	Low.
CL	A–6	100	90–100	85–95	0. 20–0. 63	0. 20–0. 23	5. 5–7. 8	Moderate.
CL	A–7	90–100	85–100	85–95	0. 20–0. 63	0. 17–0. 20	7. 4–8. 4	High.
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ML	A–4	100	90–100	80–90	0. 63–2. 0	0. 20–0. 23	4. 5–5. 5	Low.
CL	A–7	100	95–100	85–95	0. 20–0. 63	0. 18–0. 21	4. 5–5. 5	Moderate.
CH	A–7	100	90–100	90–95	0. 06–0. 20	0. 16–0. 20	4. 5–5. 5	High.
ML, SM	A–4	100	70–85	45–55	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
ML, CL	A–4, A–6	100	80–95	55–70	0. 63–2. 0	0. 12–0. 17	4. 5–5. 5	Low.
SM, ML	A–4	100	60–70	45–55	0. 63–2. 0	0. 10–0. 13	4. 5–5. 5	Low.
CL	A–6	100	90–100	85–95	0. 63–2. 0	0. 20–0. 23	4. 0–5. 0	Low.
CH	A–7	100	85–100	90–95	0. 0–0. 06	0. 17–0. 20	4. 0–6. 5	High.
ML, SM	A–4	100	70–85	45–55	0. 63–2. 0	0. 10–0. 15	5. 6–8. 4	Low.
CL	A–6	100	90–100	85–95	0. 20–0. 63	0. 18–0. 20	5. 6–8. 4	Low.
CH	A–7	100	95–100	90–100	0. 0–0. 06	0. 17–0. 20	5. 6–8. 4	High.
CL	A–6	100	90–100	85–95	0. 63–2. 0	0. 18–0. 20	5. 6–8. 4	Moderate.
CH	A–7	100	95–100	90–100	0. 0–0. 06	0. 17–0. 20	5. 6–8. 4	High.
ML, SM	A–4	100	70–85	45–55	2. 0–6. 3	0. 10–0. 15	4. 5–5. 5	Low.
SC, CL	A–7	100	85–95	45–60	0. 20–0. 63	0. 15–0. 19	4. 5–5. 5	Moderate.
SC	A–6	100	80–95	35–50	0. 20–0. 63	0. 16–0. 20	4. 5–5. 5	Moderate.
ML, SM	A–4	100	70–85	45–55	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
ML, CL	A–4, A–6	100	85–100	55–70	0. 63–2. 0	0. 17–0. 20	4. 5–5. 5	Low.
ML–CL	A–4, A–6	100	85–95	55–90	0. 63–2. 0	0. 15–0. 20	5. 6–7. 8	Low.
ML, CL	A–4, A–6	100	85–100	55–95	0. 63–2. 0	0. 15–0. 19	5. 6–7. 8	Moderate.
SC, CL	A–6	100	80–90	35–80	0. 63–2. 0	0. 16–0. 19	5. 6–7. 8	Moderate.
SC, CL	A–7	100	85–100	45–80	0. 63–2. 0	0. 15–0. 19	5. 6–7. 8	Moderate.
ML	A–4	100	90–100	80–90	0. 63–2. 0	0. 10–0. 16	4. 5–5. 5	Low.
CL	A–6	100	90–100	85–95	0. 06–0. 20	0. 08–0. 12	4. 5–5. 5	Low.
CL	A–6	100	95–100	85–95	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
ML, CL	A–4, A–6	100	75–85	55–70	0. 63–2. 0	0. 17–0. 20	4. 5–5. 5	Low.
CL	A–6	100	85–95	70–85	0. 06–0. 20	0. 16–0. 19	4. 5–5. 5	Moderate.
CH	A–7	100	90–100	90–95	0. 0–0. 20	0. 15–0. 18	4. 5–6. 0	High.
CH	A–7	90–100	80–95	85–90	0. 0–0. 20	0. 10–0. 15	6. 6–8. 4	High.
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TABLE 5.—*Estimated*

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	Classification: USDA texture
		Inches	
Ora: OrB2, OrC2, OrD3	30 to 60 inches for 2 to 6 months each year.	0–7	Fine sandy loam
		7–19	Loam
		19–50	Fine sandy loam
		50–55	Sandy clay loam
Prentiss: PrA, PrB2	30 to 60 inches for 2 to 6 months each year.	0–5	Fine sandy loam
		5–18	Loam
		18–48	Loam
Providence:			
PsB, PsB2, PsC2	30 to 60 inches for 2 to 6 months each year.	0–4	Silt loam
		4–18	Silt loam
		18–50	Loam
PtB2, PtC2	30 to 60 inches for 2 to 6 months each year.	0–4	Silt loam
		4–24	Silty clay loam
		24–38	Silt loam or silty clay loam
		38–72	Silty clay
Quitman: QuA	15 to 30 inches for 2 to 6 months each year.	0–19	Silt loam
		19–60	Loam
Robinsonville: Ro	30 to 60 inches for 2 to 6 months each year.	0–6	Sandy loam
		6–36	Loamy sand, sandy loam, or silt loam.
		36–50	Silty clay loam
Ruston	More than 60 inches.	0–10	Fine sandy loam
		10–24	Loam
		24–36	Loamy sand
		36–50	Loam
		50–66	Sandy clay loam
Savannah: SaA, SaB	30 to 60 inches for 2 to 6 months each year.	0–4	Fine sandy loam
		4–23	Loam
		23–32	Loam
		32–60	Sandy loam
Sumter: SuD2	30 to 60 inches for 2 to 6 months each year.	0–27	Silty clay
		27–44	Marly clay
		44–58	Marl
Tippah: ThA, ThB2, ThC	30 to 60 inches for 2 to 6 months each year.	0–8	Silt loam
		8–24	Silty clay loam
		24–62	Silty clay or clay
Tuscumbia: Tu	0 to 15 inches for 2 to 6 months each year.	0–7	Silty clay loam
		7–36	Silty clay
		36–65	Clay
Una: Un	0 to 15 inches for 2 to 6 months each year.	0–5	Silty clay
		5–57	Clay
Urban land: Ur. Properties are too variable to be rated.			

engineering properties—Continued

Classification—Continued		Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
Unified	AASHO	No. 10	No. 40	No. 200				
					Inches per hour	Inches per inch *of soil*	*pH*	
ML, SM	A-4	100	70-85	45-55	0. 63-2. 0	0. 10-0. 14	4. 5-5. 5	Low.
ML-CL	A-4, A-6	100	85-95	55-70	0. 63-2. 0	0. 12-0. 15	4. 5-5. 5	Low.
ML, SM	A-4	100	70-85	45-55	0. 20-0. 63	0. 08-0. 12	4. 5-5. 5	Low.
SC	A-6	100	80-90	35-50	0. 63-2. 0	0. 10-0. 14	4. 5-5. 5	Low to moderate.
ML, SM	A-4	100	70-85	45-55	0. 63-2. 0	0. 10-0. 15	4. 5-5. 5	Low.
ML, CL	A-4, A-6	100	85-95	55-70	0. 63-2. 0	0. 15-0. 19	4. 5-5. 5	Low.
ML, CL	A-4, A-6	100	85-95	55-70	0. 20-0. 63	0. 08-0. 12	4. 5-5. 5	Low.
ML	A-4	100	90-100	80-90	0. 63-2. 0	0. 18-0. 20	4. 5-5. 5	Low.
ML, CL	A-4, A-6	100	90-100	80-90	0. 63-2. 0	0. 18-0. 20	4. 5-5. 5	Moderate.
ML, CL	A-4, A-6	100	85-95	55-70	0. 20-0. 63	0. 10-0. 14	4. 5-5. 5	Low.
ML	A-4	100	90-100	75-90	0. 63-2. 0	0. 18-0. 20	4. 5-5. 5	Low.
CL	A-6	100	95-100	85-95	0. 63-2. 0	0. 15-0. 20	4. 5-5. 5	Moderate.
CL	A-6	100	90-100	85-95	0. 20-0. 63	0. 10-0. 16	4. 5-5. 5	Moderate.
CH	A-7	100	95-100	90-100	0. 20-0. 63	0. 12-0. 16	4. 5-5. 5	High.
ML	A-4	100	90-100	80-90	0. 63-2. 0	0. 18-0. 21	4. 5-5. 5	Low.
ML, CL	A-4, A-6	100	85-95	55-70	0. 20-0. 63	0. 10-0. 14	4. 5-5. 5	Low.
ML, SM	A-4	100	60-75	45-55	0. 63-2. 0	0. 10-0. 15	5. 6-7. 8	Low.
SM, ML	A-2, A-4	100	65-90	25-60	2. 0-6. 3	0. 10-0. 15	5. 6-7. 8	Low.
CL	A-6	100	95-100	85-95	0. 63-2. 0	0. 13-0. 20	5. 6-7. 8	Low.
ML, SM	A-4	100	70-85	45-55	2. 0-6. 3	0. 10-0. 15	4. 5-5. 5	Low.
ML, CL	A-4, A-6	100	85-95	55-70	0. 63-2. 0	0. 13-0. 17	4. 5-5. 5	Low.
SM	A-2	100	50-70	15-25	6. 3-2. 0	0. 06-0. 10	4. 5-5. 5	Low.
ML, CL	A-4, A-6	100	80-95	55-70	0. 63-2. 0	0. 13-0. 17	4. 5-5. 5	Low.
SC	A-6	100	80-90	35-50	0. 63-2. 0	0. 12-0. 16	4. 5-5. 5	Moderate.
ML, SM	A-4	100	75-85	45-55	0. 63-2. 0	0. 10-0. 15	4. 5-5. 5	Low.
ML-CL	A-4, A-6	100	80-95	55-70	0. 63-2. 0	0. 13-0. 17	4. 5-5. 5	Low.
ML-CL	A-4, A-6	100	80-95	55-70	0. 20-0. 63	0. 08-0. 12	4. 5-5. 5	Low.
ML-SM	A-4	100	65-80	45-55	0. 20-0. 63	0. 09-0. 14	4. 5-5. 5	Low.
CH	A-7	100	90-100	90-100	0. 06-0. 20	0. 15-0. 18	7. 4-8. 4	High.
CH	A-7	90-100	85-95	85-90	0. 06-0. 20	0. 10-0. 13	7. 4-8. 4	High.
ML	A-4	100	90-100	75-90	0. 63-2. 0	0. 18-0. 23	4. 5-5. 5	Low.
CL	A-6	100	95-100	85-95	0. 20-0. 63	0. 15-0. 20	4. 5-5. 5	Moderate.
CH	A-7	100	90-100	90-100	0. 06-0. 20	0. 15-0. 20	4. 5-5. 5	High.
CL	A-6	100	90-100	85-95	0. 20-0. 63	0. 15-0. 21	5. 6-7. 8	Moderate.
CH	A-7	100	85-100	85-100	0. 00-0. 06	0. 15-0. 18	5. 6-7. 8	Very high.
CH	A-7	100	80-100	85-95	0. 00-0. 06	0. 13-0. 16	5. 6-7. 8	Very high.
CH	A-7	100	85-100	90-100	0. 06-0. 20	0. 15-0. 20	4. 5-5. 5	High.
CH	A-7	100	85-100	85-95	0. 00-0. 06	0. 15-0. 17	4. 5-5. 5	High.

TABLE 6.—*Engineering*

[An asterisk in the first column indicates that at least one mapping unit is made up of two or more kinds of soil. The soils in such mapping other series that appear in

Soil series and map symbols	Suitability as source of—			Soil features affecting—	
	Topsoil	Sand	Road fill	Highway location	Dikes or levees
Arkabutla: Ar	Good	Fair to not suitable.	Fair: easily eroded; fair traffic-supporting capacity.	Flood plain; occasional to frequent flooding.	Low to fair stability.
*Cahaba: CaC2, CaE2, CaF. For properties of Ruston soils refer to Ruston series.	Good	Not suitable: underlying material is good in some areas.	Good	Soil properties favorable; topography sloping to very steep.	Moderate permeability; good to fair stability.
Catalpa: Cp	Poor	Not suitable	Poor: high shrink-swell potential.	Flood plain; high shrink-swell potential.	Cracks when dry; slowly permeable.
Commerce: Cr	Good	Poor	Fair: fair traffic-supporting capacity.	Flood plain subject to flooding.	Fair to good strength and stability.
Demopolis: DeD3	Poor	Not suitable	Poor: shallow; high shrink-swell potential.	Silty clay loam over chalk; slope.	Silty clay loam over chalk; shallow soil.
Falkner: FaA	Fair	Not suitable	Poor: underlain by clay.	Soil underlain by plastic clays; high water table.	Fair to low strength and stability; high shrink-swell potential in lower part of subsoil.
*Gullied land: GdE, GoE. Properties of Gullied land are too variable to be rated. For properties of Demopolis soils in GdE, refer to Demopolis series. For properties of Ora soils in GoE, refer to Ora series.					
Kinston: Kn	Good	Poor	Fair to good: fair traffic-supporting capacity.	High water table; subject to flooding.	Moderate permeability; fair to good strength and stability.
Kipling: KpA	Poor	Not suitable	Poor: high shrink-swell potential.	High shrink-swell potential.	High shrink-swell potential.

interpretations

units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to the first column of this table]

Soil features affecting—Continued						
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways	Limitations for sewage lagoons
Reservoir area	Embankment					
Slow seepage rate; subject to flooding.	Low to fair strength and stability.	Needs surface drainage.	Slow intake rate; very high available water capacity.	Not needed	Very high available water capacity; sod easily established.	Moderate: moderate permeability.
Excessive seepage in some areas.	Fair to good strength and stability.	Not generally needed; slope.	Moderate intake rate; moderate permeability; medium available water capacity.	Soil properties favorable on moderate slopes.	Medium available water capacity; when fertilized, sod easily established.	Severe: slope.
Slow seepage; will support deep water.	Cracks when dry; difficult to pack properly; slowly permeable.	Needs surface drainage; high water table.	Soil cracks easily; high initial intake rate, which decreases as soil becomes moist.	Not needed	High available water capacity; sod easily established.	Slight.
Subject to excess seepage in some areas.	Moderately slow permeability; fair to good strength and stability.	Needs surface drainage; high water table.	Slow to moderate intake rate; moderately slow permeability.	Not needed; flood plain.	Very high available water capacity; grows good sod.	Slight.
Chalk; excess seepage.	Difficult to pack; subject to excessive seepage.	Not needed; slope	High initial intake rate, which decreases as soil becomes moist.	Chalk about 1 foot beneath surface.	Chalk about 1 foot below surface; grows good sod.	Severe: slope; shallow to chalk.
Slow seepage rate.	Low to fair strength and stability; slow permeability.	Needs surface drainage; high water table.	Slow intake rate; slow permeability.	Soil properties favorable.	Very high available water capacity; grows fairly good sod.	Slight.
Subject to flooding by streams; moderate seepage.	Fair to good strength and stability.	Needs drainage; high water table.	Moderate intake rate; moderate permeability.	Not needed: flood plains.	High water table; medium available water capacity.	Moderate; moderate permeability.
Will support deep water; slow seepage.	Cracks when dry; subject to seepage; difficult to pack properly.	Needs surface drainage; high water table.	Soil cracks easily; high initial intake rate, which decreases as soil becomes moist.	Soil properties favorable.	Plastic clays; grows good sod; high available water capacity.	Slight.

TABLE 6.—*Engineering*

Soil series and map symbols	Suitability as source of—			Soil features affecting—	
	Topsoil	Sand	Road fill	Highway location	Dikes or levees
Leeper: Le, Lp	Poor	Not suitable	Poor: high shrink-swell potential.	Flood plain; high shrink-swell potential.	Cracks when dry; very slowly permeable.
*Luverne: LrC2, LrD2, LuF, LvE2. For properties of Cahaba soils in LuF, refer to Cahaba series. For properties of Ruston soils in LvE2, refer to Ruston series.	Fair	Not suitable	Fair: fair traffic-supporting capacity.	Underlying soil material has moderate shrink-swell potential; slope.	Moderately slow permeability; fair stability.
Mantachie: Ma	Good	Poor	Fair to good: wetness.	High water table; subject to flooding.	Moderate permeability; fair strength and stability.
Marietta: Mr	Fair	Poor	Fair to good: wetness.	Flood plain; subject to flooding.	Fair to good strength and stability.
Mashulaville: Ms, Mt	Good	Not suitable	Fair to poor: wetness.	Perched water table; drainage impeded by fragipan.	Slowly permeable; fair strength and stability.
Myatt: My	Fair	Not suitable	Fair: wetness	High water table	Slowly permeable; fair strength and stability.
*Oktibbeha: ObB2, ObC2, OhB3, OhD3, OkE3. For properties of Sumter soils in OkE3, refer to Sumter series.	Poor	Not suitable	Poor: high shrink-swell potential.	Slope; plastic clays	High shrink-swell potential.
Ora: OrB2, OrC2, OrD3	Good	Generally poor: underlying material good in some areas.	Fair to good: wetness.	Fragipan causes perched water table.	Moderately slow permeability; fair to good strength and stability.
Prentiss: PrA, PrB2	Good	Generally poor: underlying material good in some areas.	Fair: wetness	Fragipan causes perched water table.	Moderately slow permeability; fair strength and stability.

interpretations—Continued

Soil features affecting—Continued						
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways	Limitations for sewage lagoons
Reservoir area	Embankment					
Slow seepage; will support deep water.	Cracks when dry; difficult to pack properly.	Needs surface drainage; high water table.	Soil cracks easily; high initial intake rate, which decreases as soil becomes moist.	Not needed: flood plains.	Plastic clay; grows good sod; high available water capacity.	Slight.
Moderately slow seepage.	Fair strength and stability; moderately slow permeability.	Not needed; slope.	Moderate to slow intake rate; moderately slow permeability.	Soil properties favorable on moderate slopes.	High available water capacity; grows good sod.	Moderate where slopes are 5 to 8 percent. Severe where slopes are more than 8 percent.
Subject to flooding by streams; moderate seepage.	Fair strength and stability.	Needs surface drainage; high water table.	Moderate intake rate; moderate permeability.	Not needed; flood plain.	High water table; high available water capacity.	Moderate: moderate permeability.
Subject to excess seepage in some areas.	Moderate permeability; fair to good strength and stability.	Needs surface drainage; high water table.	Slow to moderate intake rate; moderate permeability.	Not needed; flood plain.	High available water capacity; grows good sod.	Moderate: moderate permeability.
Soil seepage----	Fair strength and stability; slow permeability.	Needs surface drainage; substratum drainage difficult due to fragipan; perched water table.	Moderate to slow intake rate; shallow root zone; slow permeability.	Soil properties favorable.	Medium available water capacity; grows good sod when fertilized.	Slight.
Slow seepage; high water table.	Fair strength and stability; slow permeability.	Needs surface drainage; high water table.	Moderate to slow intake rate; high water-holding capacity.	Not needed; nearly level.	High available water capacity; fairly easily sodded when fertilized.	Slight.
Slow seepage; will support deep water.	Cracks when dry; subject to seepage; difficult to pack properly.	Not needed; slope_	Soil cracks easily; high initial intake rate, which decreases as soils become moist.	Soil properties favorable in ObB2, ObC2, and OhB3.	Plastic clays; grows good sod; high available water capacity.	Moderate where slopes are 2 to 8 percent: depth to hard chalk. Severe where slopes are more than 8 percent.
Excessive seepage below fragipan in some areas.	Fair to good strength and stability; moderately slow permeability.	Not needed; slope_	Moderate intake rate; moderate permeability above fragipan; medium available water capacity.	Soil properties favorable; fragipan restricts root growth.	Medium available water capacity.	Moderate where slopes are 2 to 8 percent. Severe where slopes are more than 8 percent.
Excessive seepage below fragipan in some areas.	Fair strength and stability; moderately slow permeability.	Needs surface drainage in nearly level areas; perched water table.	Moderate intake rate; moderate permeability above fragipan; medium available water capacity.	Soil properties favorable; fragipan restricts root growth.	Medium available water capacity above fragipan.	Slight where slopes are 0 to 2 percent. Moderate where slopes are 2 to 5 percent.

TABLE 6.—*Engineering*

Soil series and map symbols	Suitability as source of—			Soil features affecting—	
	Topsoil	Sand	Road fill	Highway location	Dikes or levees
Providence: PsB, PsB2, PsC2	Good	Generally poor.	Fair: fair traffic-supporting capacity; wetness.	Fragipan causes perched water table.	Moderately slow permeability; fair stability and strength.
Providence, heavy substratum: PtB2, PtC2.	Fair	Not suitable	Poor: underlain by plastic clays; fair traffic-supporting capacity.	Underlain by plastic clays.	Fair strength and stability; moderately slow permeability.
Quitman: QuA	Good	Generally poor: underlying material good in some areas.	Fair: wetness	Fragipan causes perched water table.	Moderately slow permeability; fair stability and strength.
Robinsonville: Ro	Good	Fair to poor.	Fair to good: fair traffic-supporting capacity.	Flood plain subject to occasional flooding.	Fair to good strength and stability; moderate permeability.
Ruston	Good	Not suitable	Good	Soil properties favorable; topography level to steep.	Moderate permeability; fair to good stability and strength.
Savannah: SaA, SaB	Good	Not suitable	Fair to good: wetness; fair traffic-supporting capacity.	Fragipan causes perched water table.	Moderately slow permeability; good to fair stability.
Sumter: SuD2	Poor	Not suitable	Poor: shallow; high shrink-swell potential.	Plastic clays over marl.	Plastic clays over marl or clay; fair to low stability and strength.
Tippah: ThA, ThB2, ThC	Fair	Not suitable	Poor: underlain by clay.	Slope; underlain by plastic clays.	Fair to low strength and stability; high shrink-swell potential in lower part of subsoil.
Tuscumbia: Tu	Poor	Not suitable	Poor: very high shrink-swell potential.	Flood plain; very high shrink-swell potential.	Cracks when dry; very slowly permeable.

interpretations—Continued

Soil features affecting—Continued							
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways	Limitations for sewage lagoons
Reservoir area	Embankment					
Excessive seepage below fragipan in some areas.	Fair strength and stability; moderately slow permeability.	Not needed; slope.	Moderate intake rate; moderate permeability above fragipan; medium available water capacity.	Soil properties favorable; fragipan restricts root growth.	Medium available water capacity above fragipan.	Moderate: slope.
Slow seepage rate.	Fair strength and stability; moderately slow permeability.	Not generally needed; slope.	Slow intake rate; moderate permeability above fragipan; medium available water capacity.	Soil properties favorable; fragipan restricts root growth.	Medium available water capacity above fragipan.	Moderate: slope.
Excessive seepage below fragipan in some areas.	Fair strength and stability; moderately slow permeability.	Needs surface drainage in nearly level areas; perched water table.	Moderate intake rate; moderate permeability above fragipan; medium available water capacity.	Soil properties favorable; fragipan restricts root growth.	Medium available water capacity.	Slight.
Subject to excess seepage in some areas.	Moderate permeability; fair to good strength and stability.	Needs surface drainage; flooding.	Slow to moderate intake rate; moderate permeability.	Not needed; flood plain.	Medium available water capacity; grows good sod.	Moderate: moderate permeability.
Excessive seepage in some areas.	Fair to good strength and stability; moderate permeability.	Not generally needed; slope.	Moderate intake rate; moderate permeability; medium available water capacity.	Soil properties favorable on moderate slopes.	Medium available water capacity; grows good sod.	Moderate where slopes are 5 to 8 percent. Severe where slopes are more than 8 percent.
Excessive seepage below fragipan in some areas.	Fair to good strength and stability; moderately slow permeability.	Needs surface drainage in nearly level areas.	Moderate intake rate; moderate permeability above fragipan; medium available water capacity.	Soil properties favorable; fragipan restricts root growth.	Medium available water capacity.	Slight where slopes are 0 to 2 percent. Moderate where slopes are 2 to 5 percent.
Plastic clays over marl or clay; excessive seepage in some areas.	Difficult to pack; subject to excessive seepage; fair to low stability and strength.	Not generally needed; slope.	Soils cracks easily; high initial intake rate, which decreases as soil becomes moist.	Underlying marl; slope.	Medium available water capacity; upper part grows good sod.	Severe: slope.
Slow seepage rate.	Low to fair strength and stability; slow seepage rate.	Needs surface drainage in nearly level areas.	Slow intake rate; slow permeability.	Soil properties favorable.	High available water capacity; grows fairly good sod.	Slight where slopes are 0 to 2 percent. Moderate where slopes are 2 to 8 percent.
Slow seepage; will support deep water.	Cracks when dry; difficult to pack properly; very slowly permeable.	Needs surface drainage; high water table.	Soil cracks easily; high initial intake rate, which decreases as soil becomes moist.	Not needed; flood plain.	High available water capacity; plastic clay; grows good sod.	Slight.

TABLE 6.—*Engineering*

Soil series and map symbols	Suitability as source of—			Soil features affecting—	
	Topsoil	Sand	Road fill	Highway location	Dikes or levees
Una: Un	Poor	Not suitable	Poor: high shrink-swell potential.	Flood plain; high shrink-swell potential.	Cracks when dry; difficult to properly pack; very slowly permeable.
Urban land: Ur. Properties are too variable to be rated.					

TABLE 7.—*Soil*

[Soils were analyzed by Mississippi State Highway

Soil name and location	Laboratory report No.	Depth from surface	Moisture-density data [1]	
			Maximum dry density	Optimum moisture
		Inches	*Lb. per cu. ft.*	*Percent*
Catalpa silty clay loam: Sec. 17, T. 11 S., R. 5 E.	537904	6–20	96. 2	22. 8
	537905	41–54	96. 6	22. 0
Mantachie fine sandy loam: Sec. 1, T. 9 S., R. 6 E.	537906	35–48	110. 5	15. 0
Marietta loam: Sec. 15, T. 7 S., R. 6 E.	537909	7–21	111. 8	14. 4
	537910	46–55	105. 5	18. 8
Tuscumbia silty clay loam: Sec. 20, T. 9 S., R. 6 E.	537907	7–22	93. 7	22. 6
	537908	36–51	95. 7	23. 3

[1] Based on AASHO Designation: T 99-57, Method A (*1*).

[2] According to AASHO Designation: T88–57 (*1*). Results by this procedure differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method, and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the

the results of laboratory tests, on observations made in the field, and on the behavior of soils used in engineering structures. Depth to bedrock was not rated, as only two, Demopolis and Sumter soils, are underlain by chalk or marl. Some of the column heads are explained in the following paragraphs.

The depth from the surface is that of the major horizons in the typical profile. The soil material in these layers is classified according to the textural terms used by the United States Department of Agriculture, and according to the AASHO and the Unified systems. Also listed are the estimated percentages of material that passes No. 4, No. 10, No. 40, and No. 200 sieves. The estimates are based on test data given in table 7, on data from similar soils in other counties, and on information obtained from other parts of this soil survey. The amount of material passing through a No. 200 sieve shows the separation of the coarse-grained and the fine-grained soils.

Permeability, expressed in inches of water percolation per hour, was estimated for the soils in place. It is important in planning drainage or irrigation of a farm. Layers that impede drainage and those that are very permeable can greatly affect the suitability of the soil material for foundations. Permeability depends mainly on the texture and the structure of the soil, but it is affected by other properties, such as structure, consistence, and organic-matter content.

The available water capacity gives estimates of the approximate amount of capillary water in a soil that is wet to field capacity, or the difference between the amount of water at field capacity and the amount at the permanent wilting point of plants. The available water capacity is expressed in inches of water per inch of soil depth.

The acid or alkaline reaction of the soil is expressed in pH values. A pH value of 7.0 indicates that the soil is neutral, values lower than 7.0 indicate acidity, and higher values indicate alkalinity. Knowledge of reaction is useful

interpretations—Continued

Soil features affecting—Continued						
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways	Limitations for sewage lagoons
Reservoir area	Embankment					
Slow seepage; will support deep water.	Cracks when dry; difficult to pack properly; very slowly permeable.	Needs surface drainage; high water table.	Soil cracks easily; high initial intake rate, which decreases as soil becomes moist.	Not needed; flood plain.	High avail-water capacity; plastic clay; grows good sod.	Slight.

test data

Department Testing Division, Jackson, Mississippi]

Mechanical analysis [2]							Liquid limit	Plasticity index	Classification	
Percentage passing sieve—			Percentage smaller than—						AASHO	Unified
No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
							Percent			
100	99	90	84	69	46	39	54	31	A-7(19)	CH
100	99	93	87	73	50	45	52	29	A-7(18)	CH
100	100	56	45	39	24	20	30	13	A-6(5)	CL
100	99	78	68	49	25	20	29	13	A-6(9)	CL
100	98	78	67	56	38	33	46	27	A-7(16)	CL
100	99	88	84	74	53	45	57	32	A-7(19)	CH
100	99	89	84	70	54	47	59	36	A-7(20)	CH

SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of the grain-size fractions. The mechanical analysis data used in this table are not suitable for use in naming textural classes for soil.

if pipelines are to be constructed, because it indicates, among other things, the likelihood of corrosion.

The shrink-swell potential is rated according to the expected volume change of the soil layers that results from change in the content of moisture. It is estimated primarily on the basis of the amount and kind of clay in the soil horizons and is rated as low, moderate, high, or very high. In general soils classified CH or A-7 have a high shrink-swell potential. Clean sands and gravels (single-grain material) and soils containing a small amount of nonplastic to slightly plastic fines have a low shrink-swell potential.

Engineering interpretations of soils

In table 6 the soils of Lee County are rated according to their suitability as sources of topsoil, sand, and road fill. Also shown are features that affect the location of highways and the construction and maintenance of dikes or levees, farm ponds, drainage systems, irrigation systems, terraces and diversions, waterways, and limitations for sewage lagoons. These interpretations are based on experience with the same kinds of soil in other countries and on information in other parts of the soil survey. In this county difficulties in highway construction are caused mainly by characteristics of the soil material and by drainage. Bedrock is at so great a depth that it does not adversely affect the construction of highways except for Demopolis soils.

The suitability of soils as a source of topsoil is rated good, fair, or poor. Topsoil is soil material used to topdress slopes, roadbanks, lawns, and gardens. Important in rating suitability of soil material for use as topsoil are the productivity of the soil, the number of coarse fragments, and the thickness of the material at its source.

The suitability of a soil as a source of sand is rated as good, fair, poor, or not suitable. Generally the soils are not suitable as a source of sand. In some places the soil material in such soils as the Cahaba, Ruston, and Ora

soils is suitable for road subbase. The soils of Lee County are not suitable as a source of gravel.

Road fill is soil material used for building up road grades and is the material that supports the base layers. The properties important in evaluating soil material for use as road fill are shrink-swell potential, traffic-supporting capacity, inherent erodibility, and the thickness of the material at its source. The soils are rated as good, fair, or poor. Cahaba soils are rated as good because the shrink-swell potential is generally low, traffic-supporting capacity is good, inherent erodibility is less than severe, and the material is thicker than 6 feet at its source. Oktibbeha soils are rated as poor because the shrink-swell potential is high, traffic-supporting capacity is poor, inherent erodibility is severe, and the thickness of material is less than 4 feet at its source.

A highway location on the soils of Lee County is an embankment section or an area provided with an adequate system of subsurface and surface drainage. In lowlands and other areas that are flooded, roads should be constructed on a continuous embankment that is several feet above the level of frequent flooding.

A fragipan, or a compacted layer of silt and coarser textured material, restricts movement of water through soil and presents a design problem. Savannah, Prentiss, Ora, Providence, Quitman, and Mashulaville soils have fragipans. In nearly level areas, side ditches of roads should extend below the fragipan. The pavement grade should be at least 4 feet above the top of the fragipan. In some cases it is necessary to excavate the fragipan and replace it with a more permeable material.

Extensive use has been made of farm ponds for supplying water for livestock, for fish production, for recreation, for wildlife habitat, and for other farm purposes. Ponds are established behind dams by constructing an embankment across a watercourse or natural basin. In flat areas where the topography does not lend itself to the construction of dams across draws, pits can be dug and filled with water.

If runoff from the watershed is the only source of water, the watershed area must be large enough to contribute surface runoff in amounts sufficient to replenish the water supply as often as required.

Foundations should be of materials that have sufficient bearing strength after minimum compaction to support a dam, and the underlying material should be impervious enough to prevent excess seepage.

A complete agricultural drainage system is essential on most of the soils on bottom lands in Lee County, if the soils are to be used most efficiently. Work has been done to improve the drainage of farm land, but many additional improvements are needed. Some of the practices for improving farm drainage are discussed in the following paragraphs.

1. Adequate outlets are essential to good drainage. There are many streams and channels that, if improved, would provide outlets for farm drainage. Improvements have been planned on some of these streams and others are being planned.
2. Mains and laterals are ditches that are generally cut with a dragline and are trapezoidal in shape. These ditches serve as an outlet for smaller field ditches. They have a minimum depth of 2½ feet and a minimum bottom width of 3 feet. The side slopes range from 1:1 in clay soils to 3:1 in sandy soils. Sometimes this kind of ditch serves only one farm, but generally it provides drainage for several farms.
3. V-type and W-type ditches are used to intercept runoff from the rows and discharge it into the mains and laterals. These ditches are generally designed to remove 3 inches of rainwater in a 24-hour period. A V-ditch should be constructed as wide and flat as a V-shape permits so that farming operations can continue across the ditch when desirable, and when possible, it should be perpendicular to the rows. The W-type ditch, which is used to drain water from the rows in wide flat areas, is constructed by moving the spoil from two small parallel ditches toward the center of the area between the ditches. Water from the rows on both sides can drain easily into the side ditches. If the area between the ditches is not needed for a road, it can be cultivated.
4. Row arrangement—The arrangement of rows is an important factor in providing farm drainage. On sloping soil the rows should be arranged so that excess water is removed slowly enough to control erosion. This will also help to conserve moisture during periods of deficient rainfall. On level soils the rows should be arranged to get the best row drainage and, at the same time, facilitate the use of modern farm equipment. The length of the rows between ditches should be kept short enough that the rows do not flood on the lower end. In some places, land smoothing or land grading is necessary in order to get good row drainage.

General suitability of the soils for irrigation is shown in table 6. The average annual rainfall in Lee County is about 53 inches, but supplemental irrigation would be beneficial because the average rainfall for June, July, and August is not enough for optimum growth of plants. Sprinkler irrigation has not been used because of the high initial cost, the cost of operation, and the comparatively low value per acre of crops grown. Furrow and border irrigation have been used very little because severe flooding makes essential land leveling impractical. When flooding of the bottom lands is controlled by water-retarding dams and by channel enlargement or improvement, land grading and surface irrigation will be economically sound and practical if other conditions are favorable.

A terrace is an earthen embankment, or ridge and a channel, constructed across the slope for the purpose of collecting runoff and transporting it to protected outlets at a gradient that minimizes erosion. Conventional terraces that follow the contours have been used extensively for years in Lee County. Such terraces ordinarily are crooked. They cut a field into numerous areas of irregular shape and make the use of mechanized farm equipment impractical. As a result of complete farm mechanization, many of the fields that have steep and irregular slopes have been converted to pasture or other use. In recent years, a different kind of terrace system has been developed to facilitate the use of farm equipment. By smooth-

ing the land, cutting and filling along terrace lines, using multiple outlets, and varying the grade, it is possible to construct a system of parallel terraces that have fewer irregularly shaped areas. This kind of terrace system can be used on much of the sloping soil that is in row crops at the present time.

A diversion is a graded or excavated channel that has a supporting ridge on the lower side, constructed across a slope at a controlled grade. The purpose of a diversion is to divert water from areas where it is in excess to sites where it can be used beneficially or disposed of safely. The channel should be designed with side slopes no steeper than 3 : 1 and a capacity to accommodate the runoff from the heaviest rain to be expected in a 10-year period. The velocity should not exceed four feet per second for clay soils and three feet per second for sandy soils.

A diversion may be used to divert water from gullies, to supplement contour stripcropping, to divert water from farm buildings, to increase drainage area above farm ponds, to protect terrace systems where the land above is not terraceable, and to intercept runoff from the hills and divert it from flat areas. Uncontrolled runoff is damaging not only to cropland, pasture, and farmsteads, but also to terrace and row arrangement systems.

The limitations of soils for construction of sewage lagoons are listed in table 6. A sewage lagoon is a shallow reservoir used to impound water and sewage for the time required for bacterial decomposition of waste materials. Most reservoirs are constructed so that the depth of water can be controlled, ranging from about two to five feet. This makes it possible for the depth of water to be increased or decreased as the climatic conditions change. The reservoir must be free of flooding and located where surface water from adjoining slopes cannot drain into it. For satisfactory performance, losses through seepage and evaporation must not exceed the incoming volume of sewage.

Sewage lagoons require consideration of the soil as a vessel for the impounded area and as soil material for the levee. The requirements for the levee are the same as for other embankments designed to impound water. The levee should be constructed with soils of high stability and low permeability. The soils which best fulfill these requirements are the GC, SC, and SM groups. The material should be free of coarse stone-size fragments (more than 6 inches in diameter) that interfere with compaction processes.

The requirements for basin floors of lagoons are a soil that is impervious to seepage, an even surface of low gradient and low relief, and little or no organic-matter content. The impervious soil material should be at least 1 foot thick. This is especially important where the water supply is from shallow wells that may be contaminated. If sewage lagoons are constructed on pervious soils, the quantity of seepage can generally be reduced by the use of compacted linings of less pervious materials. Slope and relief must be low enough and the soil material over bedrock thick enough that the floor can be constructed level. The floor of the lagoon should not contain moderate or large amounts of organic matter because it promotes excessive growth of aquatic plants, which are detrimental to proper functioning of the lagoon. Coarse fragments, more than 6 inches in diameter, interfere with manipulation and compaction of the soil material in the process of smoothing the basic floor and are therefore undesirable in sewage lagoon sites.

If the Catalpa, Tuscumbia, Una, Kipling, and Oktibbeha soils are used as subgrade, the pavements crack and warp because the soils expand and contract. The cracking and warping can be minimized if a thick layer of a soil that has low-volume change is used as a foundation course beneath the pavement. The substrata of Ruston, Cahaba, Providence, Mantachie, Ora, and Prentiss soils are sources of material that can be used satisfactorily for subcourses.

A high water table is an important consideration in planning and designing engineering works. In Lee County all alluvial soils and such upland soils as Mashulaville, Quitman, Myatt, Savannah, Prentiss, Ora, and Providence soils have a high water table.

Land is leveled (fig. 10) to provide for better surface drainage, to help in controlling irrigation water, and to facilitate mechanized farming operations. Many of the bottom land fields in the county need to be leveled. Most of the soils in the flood plains of the county are of sufficient depth to withstand a small amount of soil movement without materially affecting their productivity. There has been very little leveling done in this county because of the high flooding hazard. When flooding of the bottom land is controlled by water retarding dams and by channel improvement, leveling will be economically sound and practical, if other conditions are favorable. Three types of leveling needed are described as follows:

(1) Land smoothing consists of removing the minor surface irregularities without changing the general topography of the land. Some of these irregularities are so slight that they are not apparent to the eye. Land smoothing is usually done with land planes or floats.

(2) Rough grading consists of removing the knolls, mounds, or ridges and filling in the pockets and low areas. This kind of grading requires the moving of more soil than land smoothing and, consequently, requires the use of more and larger earth-moving equipment. Rough grading should be followed by the land smoothing operation.

***Figure 10.*—Land leveling operations on Mantachie fine sandy loam.**

(3) Land grading consists of grading the soils to a predetermined plane surface or series of plane surfaces. Although this may be level, the plane surfaces generally slope in the direction that the rows run and at right angles to the rows. This kind of grading requires a detailed engineering grading plan. Essentially the same equipment is needed for this operation as for rough grading.

Soil test data

Samples of Catalpa silty clay loam, Mantachie fine sandy loam, Marietta loam, and Tuscumbia silty clay loam were tested in accordance with procedures of the American Association of State Highway Officials (AASHO). The results of these tests and the classification of each sample according to both the AASHO and Unified systems are given in table 7.

The engineering soil classifications in table 7 are based on data obtained by mechanical analyses and by tests to determine liquid limit and plastic limit. The mechanical analyses were made by the combined sieve and hydrometer methods. The percentage of clay obtained by the hydrometer method should not be used in naming the textural classes of soils.

Moisture-density data, the relation of moisture content and the density to which a soil material is compacted, are also given in table 7. If a soil material is compacted at a successively higher moisture content and the compactive effort remains constant, the density of the compacted material increases until the optimum moisture content is reached. After that, the density decreases with increase in moisture. The highest dry density obtained is the maximum dry density, and the corresponding moisture content is the optimum moisture. Moisture-density data are important in earthwork, for as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

Liquid limit and plasticity index indicate the effect of water on consistence of soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a semisolid to a plastic state.

TABLE 8.—*Limitations of soils*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils for referring to other series that

Soil series and map symbols	Homesites	Septic tank filter fields
Arkabutla: Ar	Severe: flooding; high water table.	Severe: high water table; flooding.
Cahaba: CaC2, CaE2, CaF	Slight if slope is less than 12 percent. Moderate if slope is 12 to 17 percent. Severe if slope is more than 17 percent.	Slight if slope is less than 5 percent. Moderate if slope is 5 to 12 percent. Severe if slope is more than 12 percent.
Catalpa: Cp	Severe: flooding; high water table; high shrink-swell potential.	Severe: high water table; flooding.
Commerce: Cr	Severe: flooding; high water table.	Severe: high water table; flooding.
Demopolis: DeD3	Severe: high shrink-swell potential; shallow to chalk.	Severe: slow percolation because of chalk at a depth of about 10 inches.
Falkner: FaA	Moderate: perched water table; high shrink-swell potential of lower part of subsoil.	Severe: slow percolation; perched water table.
*Gullied land: GdE, GoE. Gullied land is too variable to rate. For Demopolis part of GdE, refer to Demopolis series; for Ora part of GoE, refer to Ora series.		
Kinston: Kn	Severe: flooding; high water table.	Severe: high water table; flooding.
Kipling: KpA	Severe: very high shrink-swell potential.	Severe: slow percolation
Leeper: Le, Lp	Severe: flooding; high water table; high shrink-swell potential.	Severe: high water table; flooding.

See footnotes at end of table.

As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a semisolid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil is plastic.

Town and Country Planning

Knowledge of the behavior of soils is a necessity in the proper planning for community development. If soil limitations are not taken into consideration, unfavorable results may occur. For example, homes built on unstable soils can settle or crack or can be flooded. Sewage disposal fields can fail because of a slow percolation rate, a high water table, or flooding. Pipes used for water or sewage may fail because of corrosion or because of a break caused by contraction and expansion in soils that have a high shrink-swell potential. Sanitary land fills may not be suitable because of flooding or the lack of fill material. Trafficways and residential streets can settle and crack because of low traffic-supporting capacity, or they may flood if improperly located.

In table 8 the soils are rated slight, moderate, or severe in degree of limitation. Soils are rated for homesites, septic tank filter fields, light industrial and commercial buildings, sanitary land fills, and trafficways and residential streets. If the rating is moderate or severe, the main limitation or limitations are given.

Homesites refer to dwellings used as private homes or to church buildings. The properties most important in evaluating limitations for this use are shrink-swell potential, depth to water table, flood hazard, slope, and depth to bedrock. Soils on which church buildings are to be constructed must be capable of supporting the building and should not be subject to flooding. The water table should be at a depth of 30 inches or more most of the year and never at a depth of less than 15 inches.

for town and country planning

in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions appear in the first column of this table]

Light industrial and commercial buildings [1]	Sanitary land fills	Trafficways and residential streets
Severe: flooding	Severe: flooding; high water table	Severe: flooding; high water table.
Moderate if slope is less than 8 percent. Severe if slope is more than 8 percent.	Slight if slope is 0 to 8 percent. Moderate if slope is 8 to 12 percent. Severe if slope is more than 12 percent.	Slight if slope is 0 to 5 percent. Moderate if slope is 5 to 17 percent. Severe if slope is more than 17 percent; erodible.
Severe: high shrink-swell potential; flooding.	Severe: flooding; clayey texture below the surface layer.	Severe: flooding; poor traffic-supporting capacity.
Severe: flooding	Moderate to severe: flooding	Severe: flooding; high water table.
Severe: depth to chalk; slope	Severe: chalk at a depth of about 10 inches	Severe: chalk at a depth of about 10 inches; slope.
Severe: bearing capacity; high shrink-swell potential.	Severe: perched water table; slow permeability.	Moderate: fair traffic-supporting capacity; perched water table.
Severe: flooding; high water table	Severe: flooding	Severe: flooding; high water table.
Severe: very high shrink-swell potential	Moderate: clayey texture below the surface layer.	Severe: poor traffic-supporting capacity.
Severe: flooding; high shrink-swell potential.	Severe: flooding; clayey texture below the surface.	Severe: poor traffic-supporting capacity; flooding.

TABLE 8.—*Limitations of soils*

Soil series and map symbols	Homesites	Septic tank filter fields
*Luverne:		
LrC2, LrD2	Moderate: slope	Severe: slow percolation
LuF For properties of Cahaba part, refer to Cahaba series.	Severe: slope	Severe: slope; slow percolation
LvE2 For properties of Ruston part, refer to Ruston series.	Severe: slope	Severe: slope; slow percolation
Mantachie: Ma	Severe: flooding; high water table	Severe: flooding; high water table
Marietta: Mr	Severe: flooding; high water table	Severe: high water table; flooding
Mashulaville: Ms, Mt	Severe: perched water table	Severe: slow percolation; perched water table.
Myatt: My	Severe: high water table	Severe: high water table
*Oktibbeha:		
ObB2, ObC2, OhB3, OhD3	Severe: high shrink-swell potential.	Severe: slow percolation
OkE3 For properties of Sumter part, refer to Sumter series.	Severe: high shrink-swell potential.	Severe: slow percolation; slope
Ora: OrB2, OrC2, OrD3	Slight	Severe: slow percolation because of fragipan.
Prentiss: PrA, PrB2	Slight	Severe: slow percolation because of fragipan.
Providence: PsB, PsB2, PsC2	Slight	Severe: slow percolation because of fragipan.
Providence, heavy substratum: PtB2, PtC2	Moderate: high shrink-swell potential of substratum.	Severe: slow percolation because of fragipan and heavy substratum.
Quitman: QuA	Moderate: high water table	Severe: slow percolation because of fragipan.
Robinsonville: Ro	Severe: flooding	Severe: flooding
Ruston	Slight if slope is less than 12 percent. Moderate if slope is 12 to 17 percent. Severe if slope is more than 17 percent.	Slight if slope is less than 5 percent. Moderate if slope is 5 to 12 percent. Severe if slope is more than 12 percent.
Savannah: SaA, SaB	Moderate: seasonal high water table.	Severe: slow percolation because of fragipan; perched water table.
Sumter: SuD2	Severe: high shrink-swell potential	Severe: slow percolation
Tippah: ThA, ThB2, ThC	Moderate: high shrink-swell potential of lower part of subsoil.	Severe: slow percolation
Tuscumbia: Tu	Severe: flooding; very high shrink-swell potential.	Severe: flooding; slow percolation rate.
Una: Un	Severe: flooding; high shrink-swell potential.	Severe: flooding; slow percolation rate.
Urban land: Ur. Properties too variable to estimate.		

[1] Engineers and others should not apply specific values to the estimates given for bearing capacity of soils.

for town and country planning—Continued

Light industrial and commercial buildings [1]	Sanitary land fills	Trafficways and residential streets
Moderate if slope is 5 to 8 percent. Severe if slope is 8 to 12 percent.	Slight if slope is less than 8 percent. Moderate if slope is more than 8 percent.	Moderate: fair traffic-supporting capacity.
Severe: slope	Moderate to severe: slope; moderately slow permeability.	Severe: slope; fair traffic-supporting capacity.
Severe: slope	Severe: slope	Moderate to severe: slope; fair traffic-supporting capacity.
Severe: flooding; high water table	Severe: flooding	Severe: flooding; high water table.
Severe: flooding; high water table	Severe: flooding; high water table	Severe: flooding; high water table.
Severe: perched water table	Severe: perched water table; difficult to drain.	Severe: high water table; poor traffic-supporting capacity.
Severe: high water table	Severe: high water table	Severe: high water table; poor traffic-supporting capacity.
Severe: high shrink-swell potential	Severe: clayey texture	Severe: poor traffic-supporting capacity.
Severe: high shrink-swell potential; slope	Severe: slope; clayey texture	Severe: poor traffic-supporting capacity; slope.
Slight if slope is 2 to 5 percent. Moderate if slope is 5 to 8 percent. Severe if slope is 8 to 12 percent.	Slight if slope is 0 to 8 percent. Moderate if slope is 8 to 12 percent.	Slight or moderate: fair traffic-supporting capacity. Slight if slope is less than 5 percent. Moderate if slope is more than 5 percent.
Slight: 0 to 5 percent slope	Slight	Moderate: fair traffic-supporting capacity.
Moderate: slope; wetness	Slight	Slight if slope is less than 5 percent. Moderate if slope is more than 5 percent.
Moderate: wetness; slope	Slight to moderate: clayey texture of substratum.	Moderate: fair traffic-supporting capacity.
Severe: high water table	Moderate: high water table	Moderate: high water table; fair traffic-supporting capacity.
Severe: flooding	Severe: flooding	Severe: flooding.
Moderate if slope is 0 to 8 percent. Severe if slope is more than 8 percent.	Slight if slope is 0 to 8 percent. Moderate if slope is 8 to 12 percent. Severe if slope is more than 12 percent.	Slight if slope is 0 to 15 percent. Moderate if slope is 15 to 17 percent. Severe if slope is more than 17 percent; erodible.
Moderate: wetness	Slight	Moderate: fair traffic-supporting capacity; perched water table.
Severe: high shrink-swell potential; slope	Severe: clayey texture	Severe: poor traffic-supporting capacity.
Severe: high shrink-swell potential	Moderate: clayey texture of lower part of subsoil.	Severe: poor traffic-supporting capacity; high shrink-swell potential.
Severe: flooding; very high shrink-swell potential.	Severe: flooding; clayey texture	Severe: flooding; poor traffic-supporting capacity; very high shrink-swell potential.
Severe: flooding; high shrink-swell potential.	Severe: flooding; clayey texture	Severe: flooding; poor traffic-supporting capacity; high shrink-swell potential.

The number of septic tank filter fields for sewage disposal has increased within recent years as a result of rural electrification and the rapid expansion of residential areas into rural communities. Permeability of the soil, ground-water level, depth to impervious layers, slope, flooding, and nearness to streams or other bodies of water should all be considered in planning and designing this type of sewage disposal system. Most of the soils in this county have severe limitations for use as septic tank filter fields, but sewage lagoons provide an alternate system of sewage disposal.

Soil permeability should be the first consideration because the effluent from the septic tank must be absorbed and filtered by the soil. The filtering process removes odors, prevents contamination of ground water, and prevents a concentration of unfiltered sewage that could reach the soil surface. Less than 45 minutes should be required for water to percolate 1 inch. Onsite percolation tests are needed in all places. Where soil variations within one disposal field are great enough to affect percolations, each trench should be placed wholly within one kind of soil so that it can absorb and filter the effluent according to its capabilities.

Disposal fields do not function satisfactorily if the water table is high or if the soil is periodically flooded. Slopes of less than 5 percent generally are not a serious limitation in either the construction or maintenance of disposal fields, provided the soils are otherwise satisfactory. Trenches should be constructed approximately on the contour so that the effluent is properly distributed over the disposal field. If the slopes are more than 12 percent, trench disposal fields are difficult to lay out and construct, and seepage beds are not practical. In steep soils there is the risk that incompletely filtered effluent may reach the surface below the disposal fields. Depth to bedrock is not a limitation to the use of soils in Lee County for disposal fields, except in areas underlain by impervious chalk at a depth of 10 inches or more.

Light industrial and commercial buildings refer to buildings other than residences that are used for stores, offices, and small industries. None of these buildings are more than three stories high or require a bearing capacity more than 6,000 pounds. They are assumed to have public or community sewage-disposal facilities.

When a good soil is chosen as a building site, expensive problems, such as flooding or having the building settle and crack, can be avoided. If a building must be built on a site having poorly suited soils, knowledge of the limitations can be helpful in designing the buildings to overcome the limitations. A knowledge of soil limitations can be helpful in determining the kind of foundation, cuts and fills, and location of streets and drainageways.

The depth of the water table influences the bearing value and stability of a soil for foundations. Manmade drainage is needed to remove excess water from poorly drained soils. The ability of soils to support loads varies considerably, and the strength of a given soil can vary considerably under different moisture conditions. Whether a soil shrinks or swells with moisture change is important to the stability of building foundations.

Sanitary land fills are disposal areas for common household refuse. The excavations are generally about 10 feet wide, 8 feet deep, and long enough to accommodate refuse from a city or town for a specified period of time. After the refuse has been dumped into the trench and compacted, about 6 inches of soil material is used to cover the refuse each day until the trench is filled. Deep gullies can be used instead of trenches.

Soils that can be used for sanitary land fills in their present state with little or no site preparation are distinguished by a rating of "slight" from those that require extensive site preparation. The rating is made on the basis of drainage, slope, soil texture, traffic-supporting capacity, and flooding. A slight limitation indicates that the soils are sloping enough to give good surface drainage, are not too steep to interfere with normal refuse-disposal operations, have an adequate drainage system that includes properly constructed trenches in which water does not pond, are not subject to flooding, can be easily worked, and can easily be maintained as an access route for vehicles. A moderate to severe limitation indicates that the soils are subject to flooding or are difficult to drain because the water table is close to the surface for long periods of time. On steep soils, disposal operations are difficult. Clayey soils are difficult to work when wet, and in these soils access roads are difficult to maintain. A few soils are shallow to chalk and may lack sufficient fill material.

Trafficways and residential streets refer to low-cost residential streets and collector streets common to expanding urban areas. They are built with a minimum of cuts, fills, and subgrade preparation. Generally, they are surfaced with flexible bituminous pavement over 6 to 12 inches of sandy base material. Soil properties important in evaluating a given soil for this use are degree of slope, depth to seasonally high water table, flooding hazard, inherent erodibility, and traffic-supporting capacity. Where choices are available, streets should be constructed on the less sloping soils or angled diagonally across steep soils to provide easier control of erosion in waterways and on roadbanks.

Uses of Soils for Recreational Purposes [6]

This section describes properties and characteristics of the soils of Lee County for outdoor recreational purposes. It was prepared for use by planners, builders, developers, landscape architects, present and potential landowners, and others interested in this growing use of land.

Lee County has a considerable potential for rural sites for lakes, vacation cottages, hunting, horseback riding, hiking, golf, and other recreational uses. Much of the county is readily accessible from U.S. Highways 278 and 45, Mississippi State Route 6, and the Natchez Trace Parkway, which are the major tourist routes. Tupelo, the county seat, is about midway between the two large metropolitan centers of Memphis, Tennessee, and Birmingham, Alabama.

In selecting an area for outdoor recreation, the suitability of the soils for each of the several activities or facilities must be determined. Some of the more common characteristics of soils that affect their use for recreational purposes are texture, depth, acidity, slope, permeability, proximity of rock or the water table to the surface, and

[6] GEORGE W. YEATES, staff conservationist, assisted in writing this section.

location in relation to flooding. Based on these and other related properties the soils of Lee County have been rated for specific outdoor recreational uses. The specific outdoor recreation activities common in Lee County are campsites, picnic areas, intensive play areas, golf courses, and paths and trails. The degree of limitation and the limitation affecting the use of soils for these purposes are shown in table 9.

Campsites are areas for temporary living out-of-doors in tents, pickup-campers, or camping trailers. Preparing a site for this activity would normally include development of areas for tents and for parking cars and trailers. Soil used for a campsite should be suitable for heavy vehicle and pedestrian traffic during the period May through September. A slight limitation for this use indicates that the soil has slopes of less than 8 percent, has good trafficability, is free from flooding, and has slight inherent erodibility. A severe limitation indicates that the soil has slopes of more than 15 percent, has poor trafficability, is frequently flooded, or has very severe inherent erodibility.

Picnic areas are sites where the main activity is eating a meal out-of-doors and where the visit of an individual or a group would not normally last more than 2 to 3 hours. Picnic areas are used to some degree throughout the year, and soils for such areas should support heavy pedestrian traffic. Site preparation is required for the placement of picnic tables and fireplaces, generally within easy walking distance of a road or parking area.

A slight limitation indicates that the soil has slopes of less than 8 percent, has good trafficability, is free of flooding, and has slight inherent erodibility. A severe limitation indicates that the soil has slopes of more than 15 percent, has poor trafficability, is frequently flooded, or has very severe inherent erodibility.

Intensive play areas may include playgrounds for small children and provisions for baseball, softball, tennis, archery, target and skeet shooting, and other group or competitive sports. Site preparation that includes clearing, grading, shaping, and draining may be required in relatively large areas. Important soil properties that influence the selection of a site for these uses are depth, texture, slope or topography, and permeability.

A slight limitation indicates that the soil has slopes of less than 2 percent, good trafficability, and good drainage. A severe limitation indicates that the soil has slopes of more than 6 percent and poor trafficability.

Golf courses refer to driving ranges, par-3, and standard courses but not to greens and tees or to miniature golf courses, because they are manmade. Site preparation may involve clearing, grading, shaping, draining, and planting grass and trees in extensive areas. Soils well suited to golf courses have predominantly moderate slopes and can support heavy pedestrian traffic.

A slight limitation indicates that the soil has good trafficability, is well drained, has high productivity, and has slopes of less than 8 percent. A severe limitation indicates that the soil has poor trafficability, is subject to flooding, has low productivity, and has slopes of more than 15 percent.

Paths and trails refer to areas used for hiking, horseback riding, and bicycling. The natural condition of areas for these activities largely determines their selection. Site preparation generally includes some clearing and minor cuts and fills in constructing the paths used for hiking and for riding horses and bicycles. Suitable soils are capable of supporting heavy pedestrian traffic, have moderate slopes, and are subject to only infrequent flooding.

A slight limitation indicates that the soil has slopes of less than 15 percent, has good trafficability, is free of flooding, and has slight erodibility. A severe limitation indicates that the soil has slopes of more than 25 percent, has poor trafficability, and is subject to frequent flooding.

Each of several important recreational activities, not listed in table 9, are described in the following paragraphs, and characteristics influencing the ratings of soil limitations for the purposes are given. This information may be used with table 9, other information to be found elsewhere in this survey, and with the soil map at the back of the survey as a guide to selecting a site and planning its use for recreational purposes. An intensive onsite investigation should be made of any area under consideration before making final plans or beginning construction.

Ponds and reservoirs are manmade impoundments ranging up to several hundred acres in size. They are the most important single improvement influencing rural outdoor recreational development. The selection of areas for such impoundments should consider slope (topography), texture, and depth. Specific soil characteristics for construction of recreational reservoirs are listed in table 6.

Many of the larger ponds and reservoirs are developed for swimming, which is an important outdoor activity in Lee County. Soils and topography suitable for a desirable reservoir that includes development of many of the most common recreational facilities are generally suitable also for the development of swimming areas. Soil limitations are most likely to involve only surface texture, which are usually overcome by the application of sand or the establishment of vegetation on the beaches and adjacent areas.

Formation and Classification of the Soils

This section describes the factors of soil formation, the processes of horizon differentiation, and classification of soils.

Factors of Soil Formation

Soil is the product of the interaction of the five major factors of soil formation. These are living organisms, climate, parent material, relief, and time.

Living organisms

Plants, earthworms, animals, insects, and other forms of life that live on and in the soil have an active part in soil-forming processes. The plants and animals play an extremely important part in the development of soils. Some plants and animals tend to encourage the growth of some plants but destroy other plants. Animals burrow beneath the surface and mix the soil.

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TABLE 9.—*Limitations of*

[An asterisk in the first column indicates that at least one mapping unit is made up of two or more kinds of soil. The soils in such mapping other series that appear in

Soil	Campsites	Picnic areas
Arkabutla: Ar	Severe: high water table; flooding	Moderate: flooding
Cahaba:		
CaC2	Slight	Slight
CaE2	Moderate: slope	Moderate: slope
CaF	Severe: slope	Severe: slope
Catalpa: Cp	Severe: flooding	Moderate: flooding; silty clay loam surface layer.
Commerce: Cr	Severe: flooding; high water table	Severe: flooding; high water table
Demopolis: DeD3	Moderate: slope; silty clay loam surface layer.	Moderate: slope; silty clay loam surface layer.
Falkner: FaA	Moderate: slow permeability	Slight
Gullied land: GdE, GoE. Properties too variable to estimate.		
Kinston: Kn	Severe: flooding; high water table	Severe: flooding; high water table
Kipling: KpA	Severe: wetness; very slow permeability.	Moderate: wetness
Leeper: Le, Lp	Severe: flooding; very slow permeability.	Moderate: flooding; fine sandy loam and silty clay loam surface layer.
*Luverne:		
LrC2	Slight	Slight
LrD2	Moderate: slope	Moderate: slope
LuF For Cahaba part of LuF, refer to CaF in Cahaba series.	Severe: slope	Severe: slope
LvE2	Moderate: slope	Moderate: slope
Mantachie: Ma	Severe: flooding; high water table	Moderate: flooding; high water table.
Marietta: Mr	Severe: flooding	Moderate: flooding
Mashulaville: Ms, Mt	Severe: wetness	Severe: wetness
Myatt: My	Severe: wetness	Severe: wetness
Oktibbeha:		
ObB2, ObC2	Severe: poor trafficability	Severe: poor trafficability
OhB3, OhD3	Severe: poor trafficability; erosion hazard.	Severe: poor trafficability; erosion hazard.
OkE3	Severe: poor trafficability	Severe: poor trafficability
Ora:		
OrB2	Slight	Slight
OrC2	Slight	Slight
OrD3	Moderate: slope	Moderate: slope
Prentiss: PrA, PrB2	Slight	Slight

soils for recreational uses

units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to the first column of this table]

Intensive play areas	Golf courses	Paths and trails
Severe: flooding	Severe: flooding	Moderate: flooding.
Severe: slope	Slight	Slight.
Severe: slope	Severe: slope	Moderate: slope.
Severe: slope	Severe: slope	Severe: slope.
Severe: flooding	Severe: flooding	Moderate: flooding.
Severe: flooding; high water table	Severe: flooding; high water table	Severe: flooding; high water table.
Severe: slope	Severe: depth to chalk is 4 to 16 inches	Moderate: silty clay loam surface layer.
Moderate: slow permeability	Moderate: fair trafficability	Slight.
Severe: flooding; high water table	Severe: flooding; high water table	Severe: flooding; high water table.
Severe: very slow permeability; wetness	Moderate: fair trafficability	Moderate: wetness.
Severe: flooding; very slow permeability	Severe: flooding; poor trafficability	Moderate: fine sandy loam and silty clay loam surface layer.
Severe: slope	Slight	Slight.
Severe: slope	Moderate: slope	Slight.
Severe: slope	Severe: slope	Severe: slope.
Severe: slope	Moderate: slope	Moderate: slope.
Severe: flooding; high water table	Moderate: flooding; high water table	Moderate: flooding; high water table.
Severe: flooding	Moderate: flooding	Moderate: flooding.
Severe: wetness	Severe: wetness	Severe: wetness.
Severe: wetness	Severe: wetness	Severe: wetness.
Severe: poor trafficability	Severe: poor trafficability	Severe: poor trafficability.
Severe: poor trafficability; erosion hazard.	Severe: poor trafficability; erosion hazard.	Severe: poor trafficability; erosion hazard.
Severe: poor trafficability	Severe: poor trafficability	Severe: poor trafficability.
Moderate: slope	Slight	Slight.
Severe: slope	Slight	Slight.
Severe: slope	Moderate: slope	Slight.
Slight	Slight	Slight.

TABLE 9.—*Limitations of*

Soil	Campsites	Picnic areas
Providence:		
PsB, PsB2, PsC2, PtB2	Slight	Slight
PtC2	Slight	Slight
Quitman: QuA	Severe: wetness	Severe: wetness
Robinsonville: Ro	Severe: flooding	Moderate: flooding
Savannah: SaA, SaB	Moderate: perched water table; fair trafficability.	Moderate: fair trafficability
Sumter: SuD2	Severe: poor trafficability	Severe: poor trafficability
Tippah:		
ThA, ThB2	Moderate: slow permeability	Slight
ThC	Moderate: slow permeability	Slight
Tuscumbia: Tu	Severe: wetness; flooding; very slow permeability.	Severe: wetness; flooding
Una: Un	Severe: wetness; flooding; very slow permeability.	Severe: wetness; flooding
Urban land: Ur. Properties too variable to estimate.		

The soils of Lee County formed under a deciduous forest. Early settlers found dense stands of mixed hardwoods and an understory of vines and native shrubs on the lower hillsides. The upper ridges were covered with hardwood and pine trees. The stream bottoms had a native vegetation ranging from fresh-water swamp to thick stands of large deciduous trees and a heavy understory of vines and cane.

Most of the living organisms in the soils of this county are plants, but there are also small animals. The plants include algae, fungi, bacteria, the roots of higher plants, and others.

The existence of these organisms depends mainly on the soil conditions and the food supply.

The most intensive activity of earthworms and crayfish is within the uppermost few inches of the soil. When both animals and plants die, their bodies return to the soil and decay to form humus.

The complex of living organisms affecting soil genesis in Lee County has been drastically changed by man's activity. The clearing of forests, cultivation of fields, the introduction of new plant species, and drainage of wet areas will affect the direction and the rate of soil formation in the future.

Climate

Lee County has a typical humid temperate climate that is characteristic of the southeastern United States. The summers are hot, and the winters are mild. Rainfall averages about 53 inches a year, and annual snowfall is generally light. The high rainfall and temperature have favored soil development. Many of the soils are strongly weathered, highly leached, acid, and low in natural fertility.

The climate is uniform throughout the county, therefore, differences in soils within the county cannot be explained on the basis of differences in climate.

Parent material

The soils of Lee County formed mainly in sediments deposited in the Gulf of Mexico (*15*). The Gulf of Mexico covered the Mississippi River Valley as far northward as Cairo, Illinois, during the late Mesozoic and early Cenozoic eras of geologic time. All of the State of Mississippi was covered, except for small areas in Tishomingo County. Sands, silts, clays, and calcareous formations were the sediments that remained when the water receded.

The unconsolidated mass, and in some places, a consolidated mass in which soils have formed is called parent material, which is strongly related to the chemical and mineralogical composition of the soil. The parent material of the soils of Lee County consists of marine deposits, alluvium, and loess.

In the northeastern and east central parts of the county, the soils formed in noncalcareous marine deposits. Among these are Cahaba, Luverne, and Ora soils. In the western and southeastern parts of the country, the soils formed in calcareous deposits. Among these are Oktibbeha, Sumter, and Demopolis soils.

The alluvium consists of sandy to clayey sediments and ranges from very strongly acid to alkaline. Among the soils formed in alluvium are Mantachie soils, which are acid and loamy, and Catalpa soils, which are nonacid and clayey.

In the western part of the county the soils formed in a thin silty mantle, less than 4 feet thick, of windblown

soils for recreational uses—Continued

Intensive play areas	Golf courses	Paths and trails
Moderate: moderately slow permeability; slope.	Slight	Slight.
Severe: slope	Slight	Slight.
Severe: wetness	Moderate: wetness	Moderate: wetness.
Severe: flooding	Severe: flooding	Slight.
Moderate: fair trafficability	Slight	Slight.
Severe: slope; poor trafficability	Severe: poor trafficability	Severe: poor trafficability.
Moderate: slow permeability	Moderate: slow permeability	Slight.
Severe: slope	Moderate: slow permeability	Slight.
Severe: wetness; flooding; very slow permeability.	Severe: flooding	Severe: wetness; flooding.
Severe: wetness; flooding; very slow permeability.	Severe: flooding	Severe: wetness; flooding.

material or loess. Among these are Providence and Tippah soils.

Relief

Relief or shape of the landscape influences soil formation through its effects on drainage, erosion, plant cover, and soil temperature.

The relief of Lee County ranges from nearly level to steep. The slope range is 0 to 30 percent. The maximum difference in elevation is between the valleys and the crests of the adjacent hills. It is about 125 feet.

The southern and western parts of the county have wide flood plains and uplands and terraces that are nearly level to strongly sloping. The northeastern part of the county has narrow ridgetops and steep side slopes.

Time

Usually a long period of time is required for soil formation. Differences in the length of time account for most of the soil differences not attributed to the other factors of soil formation. The soils along the streams are the youngest in the county. The older soils have a greater degree of horizon differentiation than the young ones. The soils on the uplands are the oldest in the county.

Most of the soils that formed on the smoother parts of the uplands and on older stream terraces have a well-defined soil profile. These soils have an A horizon and a B horizon, in which silicate clay has accumulated. The Cahaba, Providence, and Ruston soils are examples of older soils.

The soil materials of the flood plains are more recent and have not developed into mature soils. These soils have an A horizon and a B horizon that have been altered but in which silicate clay has not accumulated. Mantachie and Leeper soils are examples of these soils.

Processes of Soil Horizon Differentiation

The soil horizons differ in one or more properties, such as color, texture, structure, consistence, porosity, and reaction. They may be thick or thin. The soil-forming processes are accumulation of organic matter, leaching of calcium carbonate, reduction and transfer of iron, and translocation of silicate clay minerals.

Leaching of carbonates and bases have occurred in all the soils, except the Demopolis and Sumter soils and soils of the flood plains, such as Catalpa, Leeper, Marietta, and Robinsonville soils.

Reduction and transfer of iron is evident in the poorly drained soils, such as Mashulaville soils. Gray color indicates the reduction and loss of iron. Reddish mottles and concretions indicate an accumulation of iron.

Silicate clay translocation is evident in the B horizon for such soils as Cahaba and Providence soils. These soils have an A horizon that contains a low proportion of clay. The B horizon has an accumulation of clay and clay films around the peds and in the pores and evident subangular blocky structure.

Soils, such as the Arkabutla and Mantachie soils, have an accumulation of organic matter in the A horizon, have lost bases by leaching, and have cambic horizons with evident structure. Reduction and transfer of iron have also taken place. Silicate clay has not accumulated on ped faces or in the pores.

Classification of the Soils

Classification consists of an orderly grouping of soils according to a system designed to make it easier to remember soil characteristics and interrelationships. Classification is useful in organizing and applying the results of experience and research. Soils are placed in narrow classes for discussion in detailed soil surveys and for application of knowledge within farms and fields. The many thousands of narrow classes are then grouped into progressively fewer and broader classes in successively higher categories, so that information can be applied to large geographic areas.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*2*) and revised later (*7*). The system currently used by the National Cooperative Soil Survey was developed in the early sixties (*5*) and was adopted in 1965 (*10*). It is under continual study.

The current system of classification has six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great group, the subgroup, the family, and the series. The criteria for classification are soil properties that are observable or measurable, but the properties are selected so that soils of similar genesis are grouped together. The placement of some soil series in the current system of classification, particularly in families, may change as more precise information becomes available.

Table 10 shows the classification of each soil series of Lee County by family, subgroup, and order, according to the current system.

ORDER.—Soils are grouped into orders according to properties that seem to have resulted from the same processes acting to about the same degree on the parent material. Ten soil orders are recognized in the current system: Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. The properties used to differentiate the soil orders are those that tend to give broad climatic groupings of soils. Two exceptions, Entisols and Histosols, occur in many different climates.

Five of the ten orders occur in this county: Entisols, Inceptisols, Mollisols, Alfisols, and Ultisols. The Entisols are recent soils that lack genetic horizons except for an ochric epipedon. Inceptisols occur on young surfaces but have been altered by soil-forming processes. The Alfisols are soils that have a clay-enriched B horizon that is high in base saturation. The Ultisols are soils that have a clay-enriched B horizon that is low in base saturation. The Mollisols are mineral soils in which the surface layer is thick, dark colored, and has high base saturation.

SUBORDER: Each order is divided into suborders, primarily on the basis of those soil characteristics that seem to produce classes having the greatest genetic similarity. The climatic range is narrower than that permitted in the order. The soil properties considered are mainly those that reflect either the presence or absence of waterlogging or soil differences resulting from the climate or vegetation.

GREAT GROUP: Each suborder is divided into great groups on the basis of uniformity of kinds and sequence of major soil horizons and features. Horizons used are those in which clay, iron, or humus have accumulated or those that have fragipans that interfere with root development or water movement.

TABLE 10.—*Soil series classified according to the current classification system*

Series	Family	Subgroup	Order
Arkabutla	Fine-silty, mixed, acid, thermic	Aeric Fluventic Haplaquepts	Inceptisols.
Cahaba	Fine-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Catalpa	Fine, mixed, thermic	Aquic Fluventic Hapludolls	Mollisols.
Commerce	Fine-silty, mixed, nonacid, thermic	Aeric Fluventic Haplaquepts	Inceptisols.
Demopolis	Loamy-skeletal, carbonatic, thermic, shallow	Typic Udorthents	Entisols.
Falkner	Fine-silty, siliceous, thermic	Aquic Paleudalfs	Alfisols.
Kinston	Fine-loamy, siliceous, acid, thermic	Fluventic Haplaquepts	Inceptisols.
Kipling	Fine, montmorillonitic, thermic	Vertic Hapludalfs	Alfisols.
Leeper	Fine, montmorillonitic, nonacid, thermic	Chromudertic Haplaquepts	Inceptisols.
Luverne	Clayey, mixed, thermic	Typic Hapludults	Ultisols.
Mantachie	Fine-loamy, siliceous, acid, thermic	Aeric Fluventic Haplaquepts	Inceptisols.
Marietta	Fine-loamy, mixed, thermic (siliceous)	Aquic Fluventic Eutrochrepts	Inceptisols.
Mashulaville [1]	Coarse-loamy, siliceous, thermic	Typic Fragiaquults	Ultisols.
Myatt	Fine-loamy, siliceous, thermic	Typic Ochraquults	Ultisols.
Oktibbeha	Very fine, montmorillonitic, thermic	Vertic Hapludalfs	Alfisols.
Ora	Fine-loamy, mixed, thermic	Typic Fragiudults	Ultisols.
Prentiss	Coarse-loamy, siliceous, thermic	Ochreptic Fragiudults	Ultisols.
Providence	Fine-silty, mixed, thermic	Typic Fragiudalfs	Alfisols.
Quitman	Coarse-loamy, mixed, thermic	Aquic Fragiudults	Ultisols.
Robinsonville [2]	Coarse-loamy, mixed, nonacid, thermic	Typic Udifluvents	Entisols.
Ruston	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Savannah [3]	Fine-loamy, siliceous, thermic	Typic Fragiudults	Ultisols.
Sumter	Fine-silty, carbonatic, thermic	Rendollic Eutrochrepts	Inceptisols.
Tippah	Fine-silty, mixed, thermic	Aquic Paleudalfs	Alfisols.
Tuscumbia	Fine, mixed, nonacid, thermic	Vertic Haplaquepts	Inceptisols.
Una	Fine, mixed, acid, thermic	Fluventic Haplaquepts	Inceptisols.

[1] Some areas of these soils are taxadjuncts to the Mashulaville series in that they have colors of chroma 2 in the upper 30 inches.
[2] These soils are correlated as taxadjuncts to the Robinsonville series in that they have a lower Ab horizon of silty clay loam.
[3] These soils are taxadjuncts to the Savannah series in that they contain 15 to 18 percent clay in the control section.

SUBGROUP: The subgroups are divisions of the great groups consisting of the central (typic) segments and others called intergrades having, in addition to properties of the great group, one or more properties of another great group, subgroup, or order.

FAMILY: The families are separated within a subgroup primarily on the basis of properties important in the growth of plants or engineering behavior. These properties include texture, mineralogy, reaction, soil temperature, and other characteristics, such as permeability, thickness of horizons, and consistence. Except for soil temperature, all of these soil properties are variable in the soils of Lee County. All soils in the county are in the thermic soil temperature class.

SERIES: The series is a group of soils that have major horizons that, except for texture of surface layer, are similar in important characteristics and arrangement in the profile. Some of the soils of this county do not fit in a series that has been recognized in the classification system, but recognition of a separate series would not serve a useful purpose. Such soils are named for series they strongly resemble because they differ from such series in ways too small to be of consequence in interpreting their usefulness or behavior. Soil scientists designate such soils as taxadjuncts to the series for which they are named. In this survey soils named in the Mashulaville, Robinsonville, and Savannah series are taxadjuncts to those series.

General Nature of the County

The physiography, relief, drainage, water supply, and climate of Lee County are discussed in this section.

Physiography and Relief

Lee County lies wholly within the Gulf Coastal Plain physiographic province (*4*). The county has two regions: the Tombigbee River hills, or fall line hills and the Blackland Prairie, or black belt. The Tombigbee River hills region is in the east central and northeastern parts of the county. This is the area where the Coffee Member of the Selma Formation outcrops. The remainder of the county is Blackland Prairie and is the area where the Demopolis and Mooreville members of the Selma Formation outcrop.

In general the Lee County part of the Tombigbee River hills region averages about 100 feet in relief. It consists of a series of valleys and ridges that run in a southern and southeastern direction. The northeast- and east-facing slopes are generally short and steep, and the southwest- and west-facing slopes are long and gently sloping. This region is underlain by sand, clay, and shale belonging in the most part to the Coffee Member of the Selma Formation and the Tombigbee Member of the Eutaw Formation, which crops out in the extreme southeastern part of the county.

The Blackland Prairie belt is underlain by chalk, which belongs to the Demopolis and Mooreville members of the Selma Formation. The topography is nearly level to rolling hills separated by wide alluvium filled bottom lands. A conspicuous feature is steep bluffs along the south and east sides of the larger stream valleys. These bluffs often consist of severely eroded Selma Chalk. Geologic terraces of Tertiary and Quaternary material are along many of the larger streams. The Blackland Prairie belt has local relief of 40 to 50 feet.

The overall relief of the county ranges from about 520 feet on the bluffs on the southern side of Patch Creek in the northeastern part to about 200 feet at the bottom of Town Creek at the southern boundary.

Drainage and Water Supply

All of Lee County lies within the Tombigbee River Basin. Most of the western part and much of the southeastern part of the county is drained by Town Creek and its tributaries. From north to south its main southeastwardly flowing tributaries are Camp, Tishomingo, Euclautubba, Mud, Yonaba, Coonewah, Kings, and Chiwapa Creeks. In the eastern part of the county Tulip, Garrett, Skaggs, Smith, Carmichael, and Leeper Creeks drain southwestwardly into Town Creek. The southwestern part of the county is drained by Tubbalubba, Balls, and Willgo Creeks. The northeastern corner of the county is drained in a southeastward direction by Twentymile Creek and its tributaries Okeelala, Campbelltown, and Dugger Creeks. The rest of the eastern part of the county is drained to the southeast by Penny, Mantachie, Puncheon, Patch, Boguefala, Boguegaba, Shoaf, Wolf, and Cowpenna Creeks. The pattern of drainage is generally of the dendritic type.

Only the larger creeks have running water all year, and some of them go dry in the drier years. There are very few springs and artesian wells in the county. Most water for livestock is obtained from numerous manmade ponds and small lakes. In recent years many communities have installed water systems that obtain water from deep wells. Those homes and farms not on community systems obtain water from individual shallow and deep wells.

Climate [7]

Lee County has a warm humid climate and abundant rainfall. Average temperatures range from a low of about 34° F. in January to a high of about 92° in July and August. The year-round relative humidity is 60 to 100 percent of saturation about 64 percent of the time. Rainfall averages about 53 inches per year. Table 11 shows data on temperature and precipitation at Tupelo. Table 12 shows the probability of freezing temperatures in spring and fall. The highest temperature ever recorded was 109° on July 29, 1930, and the lowest was −14° recorded on January 27, 1940.

In table 12 are listed the probabilities of low temperatures in spring and fall. The table gives probabilities of frost for temperatures of 36° and 40° because, if the sky is clear and the air is calm, frost can form near the ground at night and adversely affect seeds in beds and young plants, even though the temperature registered on a thermometer 5 feet above ground in a shelter is higher than 32°. On cold windy nights, the temperature is the same or lower on hilltops than in the valleys, but on clear calm nights, it is likely to be considerably lower in the valleys and in open country than it is on the hilltops and in large towns.

[7] RALPH SANDERS, State climatologist (Ret.), Environmental Science Services Administration, assisted in preparation of this section.

TABLE 11.—*Temperature and precipitation data*

[Data from records kept at Tupelo for the period 1931–52; elevation, 289 feet]

Month	Temperature			Precipitation	
	Average	Average daily maximum	Average daily minimum	Average total	Average snowfall
	° F.	° F.	° F.	Inches	Inches
January	44.1	53.8	34.4	5.87	1.4
February	46.4	56.2	36.6	5.50	.4
March	53.6	64.5	42.7	6.95	.1
April	62.5	73.7	51.3	3.89	0
May	71.3	82.8	59.9	3.82	(1)
June	79.5	90.8	68.1	3.87	0
July	81.6	92.2	71.0	4.51	0
August	81.3	92.5	70.1	2.88	0
September	75.0	86.9	63.2	3.02	0
October	64.5	77.8	51.2	2.84	0
November	52.0	63.2	40.9	4.50	.1
December	45.6	55.1	36.0	5.36	.2
Year	63.1	74.1	52.1	53.01	2.2

[1] Trace.

TABLE 12.—*Probabilities of low temperatures in spring and fall*

Probability	Dates for given probability at temperature of—					
	20° F. or colder	24° F. or colder	28° F. or colder	32° F. or colder	36° F. or colder	40° F. or colder
Spring:						
1 year in 10 later than	February 21	March 8	March 28	April 17	April 28	May 10
2 years in 10 later than	February 12	March 1	March 21	April 10	April 21	May 3
5 years in 10 later than	January 27	February 15	March 7	March 27	April 7	April 19
Fall:						
1 year in 10 earlier than	November 26	November 13	October 26	October 18	October 5	September 29
2 years in 10 earlier than	December 3	November 19	November 1	October 24	October 11	October 5
5 years in 10 earlier than	December 16	December 1	November 12	November 4	October 22	October 16

Winter and spring are the wettest seasons, and fall is the driest. Dry weather in fall is especially beneficial to harvesting operations and to the planting of winter grain. In an unusually dry fall, germination of grain is hindered at times or planting is delayed too long. Rains in winter and spring may last for several days, but they normally occur as brief showers along the leading edge of a mass of cold air. Rains in summer come as local thundershowers that may bypass one area for days and even weeks and bring to another area enough moisture for corn and other crops. Dry weather and plentiful sunshine during summer are especially beneficial to cotton.

The wettest year of record was 1932 when 75.95 inches of rain fell, and the driest year was 1943 when the total rainfall was 34.55 inches. The wettest month was January 1949 when 15.24 inches of rainfall was recorded. The wide range in monthly rainfall is shown in table 11. October is normally the driest month of the year, and March is normally the wettest month.

Although tropical storms and hurricanes have never caused winds of gale or hurricane force in Lee County, they have caused heavy rains that have resulted in floods and ruined unharvested crops. During the past 42 years there have been 8 tornadoes in the western and central parts of the county and from 4 to 8 tornadoes in the entire county. The distribution of tornadoes is affected primarily by the topography to the southwest of the county. In the past 45 years there have been at least 16 damaging thunderstorms and seven severe hailstorms in Lee County.

Soil temperature, within limits, controls the possibilities of plant growth and soil formation. Biological processes in the soil are controlled to a large degree by soil temperature and moisture. All the soils of Lee County are in the thermic temperature class. This means that at a depth of 20 inches there is a difference of 9° F. between mean summer and winter temperature and the mean annual temperature is 59° to 72°.

Farming

Little is known about the earliest farming in Lee County. The Indians grew some corn, melons, and beans, but after white settlers moved into the area cotton became the chief crop.

Since 1937, the system of farming has steadily changed from cotton to sod crops and raising livestock. Until 1966, cotton continued to be the major row crop. Since that time soybeans have been the leading row crop. Soybeans, cotton, poultry, and beef and dairy cattle are important sources of farm income. In recent years the acreage used for truck crops has increased.

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Calcareous soil. A soil containing enough calcium carbonate (often with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: Clay coat, clay skin.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Contour farming. Plowing, cultivating, planting, and harvesting in rows that are at right angles to the natural direction of the slope or that are parallel to terrace grade.

Eluviation. The movement of material from one place to another within the soil, in either true solution or colloidal suspension. Soil horizons that have lost material through eluviation are said to be eluvial; those that have received material are illuvial.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic matter and clay but is rich in silt or very fine sand. The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray in color. The term "gleyed" is applied to soil horizons with yellow and gray mottling caused by intermittent waterlogging.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the

solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Infiltration. The downward entry of water into immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Leaching. The removal of soluble materials from soils or other material by percolating water.

Permeability. The quality of a soil horizon that enables water or air to move through it. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Mildly alkaline	7.4 to 7.8
Very strongly acid	4.5 to 5.0	Moderately alkaline	7.9 to 8.4
Strongly acid	5.1 to 5.5	Strongly alkaline	8.5 to 9.0
Medium acid	5.6 to 6.0	Very strongly alkaline	9.1 and higher
Slightly acid	6.1 to 6.5		
Neutral	6.6 to 7.3		

Sand. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Second bottom. The first terrace above the normal flood plain of a stream.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated,) *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. The suitability of the soils for crops, pasture, and woodland is defined in the description of each mapping unit. The capability classification system is described on pages 31 and 32. For information about the suitability of the soils as woodland and wildlife habitat, refer to the sections "Use of Soils for Woodland" and "Use of Soils for Wildlife." Other information is given in tables as follows:

Acreage and extent, table 1, page 6.
Estimated yields, table 2, page 33.

Engineering uses of soils, tables 5, 6, and 7, pages 44 through 55.
Town and country planning, table 8, page 58.

Map symbol	Mapping unit	Described on page	Capability unit	Woodland suitability group	Wildlife suitability group
			Symbol	Symbol	Number
Ar	Arkabutla loam	6	IIw-4	1w9	2
CaC2	Cahaba and Ruston fine sandy loams, 5 to 8 percent slopes, eroded	7	IIIe-3	3o1	4
CaE2	Cahaba and Ruston fine sandy loams, 12 to 17 percent slopes, eroded	7	VIe-4	3o1	5
CaF	Cahaba and Ruston fine sandy loams, 17 to 30 percent slopes	8	VIIe-1	3o1	5
Cp	Catalpa silty clay loam	8	IIw-2	1w5	1
Cr	Commerce silt loam	9	IIw-3	1w5	1
DeD3	Demopolis silty clay loam, 5 to 12 percent slopes, severely eroded	10	VIe-2	4d3c	6
FaA	Falkner silt loam, 0 to 2 percent slopes	10	IIIw-2	2w8	2
GdE	Gullied land-Demopolis complex, 5 to 20 percent slopes	11	VIIe-3	---	6
GoE	Gullied land-Ora complex, 5 to 20 percent slopes	11	VIIe-2	---	6
Kn	Kinston fine sandy loam	12	IVw-1	2w9	2
KpA	Kipling silt loam, 0 to 2 percent slopes	12	IIw-5	2c8	3
Le	Leeper fine sandy loam	13	IIw-2	1w6	1
Lp	Leeper silty clay loam	13	IIw-2	1w6	1
LrC2	Luverne fine sandy loam, 5 to 8 percent slopes, eroded	14	IIIe-3	3c2	4
LrD2	Luverne fine sandy loam, 8 to 12 percent slopes, eroded	14	IVe-1	3c2	4
LuF	Luverne and Cahaba soils, 17 to 30 percent slopes	14	-----	---	--
	Luverne part	--	VIIe-1	3c2	5
	Cahaba part	--	VIIe-1	3o1	5
LvE2	Luverne and Ruston soils, 12 to 17 percent slopes, eroded	15	------	---	--
	Luverne part	--	VIe-4	3c2	5
	Ruston part	--	VIe-4	3o1	5
Ma	Mantachie fine sandy loam	16	IIw-4	1w9	2
Mr	Marietta loam	16	IIw-3	1w5	1
Ms	Mashulaville fine sandy loam	17	IVw-1	3w9	2
Mt	Mashulaville silt loam	17	IVw-1	3w9	2
My	Myatt fine sandy loam	18	IVw-1	2w9	2
ObB2	Oktibbeha silty clay loam, 2 to 5 percent slopes, eroded	19	IIIe-2	3c8	4
ObC2	Oktibbeha silty clay loam, 5 to 8 percent slopes, eroded	19	IVe-2	3c8	4
OhB3	Oktibbeha silty clay, 2 to 5 percent slopes, severely eroded	19	IVe-2	3c8	4
OhD3	Oktibbeha silty clay, 5 to 12 percent slopes, severely eroded	20	VIe-1	3c8	4
OkE3	Oktibbeha and Sumter soils, 8 to 17 percent slopes, severely eroded	20	-----	---	--
	Oktibbeha part	--	VIe-1	3c8	6
	Sumter part	--	VIe-1	4c2c	6
OrB2	Ora fine sandy loam, 2 to 5 percent slopes, eroded	21	IIe-1	3o7	4
OrC2	Ora fine sandy loam, 5 to 8 percent slopes, eroded	21	IIIe-1	3o7	4
OrD3	Ora fine sandy loam, 8 to 12 percent slopes, severely eroded	21	VIe-3	3o7	4
PrA	Prentiss fine sandy loam, 0 to 2 percent slopes	22	IIw-1	3o7	3
PrB2	Prentiss fine sandy loam, 2 to 5 percent slopes, eroded	22	IIe-1	3o7	4
PsB	Providence silt loam, 2 to 5 percent slopes	23	IIe-1	3o7	4
PsB2	Providence silt loam, 2 to 5 percent slopes, eroded	23	IIe-1	3o7	4
PsC2	Providence silt loam, 5 to 8 percent slopes, eroded	23	IIIe-1	3o7	4
PtB2	Providence silt loam, heavy substratum, 2 to 5 percent slopes, eroded	23	IIe-1	3o7	4
PtC2	Providence silt loam, heavy substratum, 5 to 8 percent slopes, eroded	24	IIIe-1	3o7	4
Qua	Quitman silt loam, 0 to 2 percent slopes	25	IIIw-2	2w8	2
Ro	Robinsonville soils	25	IIw-3	1o4	1
SaA	Savannah fine sandy loam, 0 to 2 percent slopes	27	IIw-1	3o7	3
SaB	Savannah fine sandy loam, 2 to 5 percent slopes	27	IIe-1	3o7	4
SuD2	Sumter silty clay, 5 to 12 percent slopes, eroded	28	VIe-2	4c2c	6
ThA	Tippah silt loam, 0 to 2 percent slopes	28	IIw-1	3o7	3
ThB2	Tippah silt loam, 2 to 5 percent slopes, eroded	29	IIe-1	3o7	4
ThC	Tippah silt loam, 5 to 8 percent slopes	29	IIIe-1	3o7	4
Tu	Tuscumbia silty clay loam	29	IIIw-1	2w6	1
Un	Una silty clay	30	IIIw-1	2w6	2
Ur	Urban land	30	-----	---	--

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

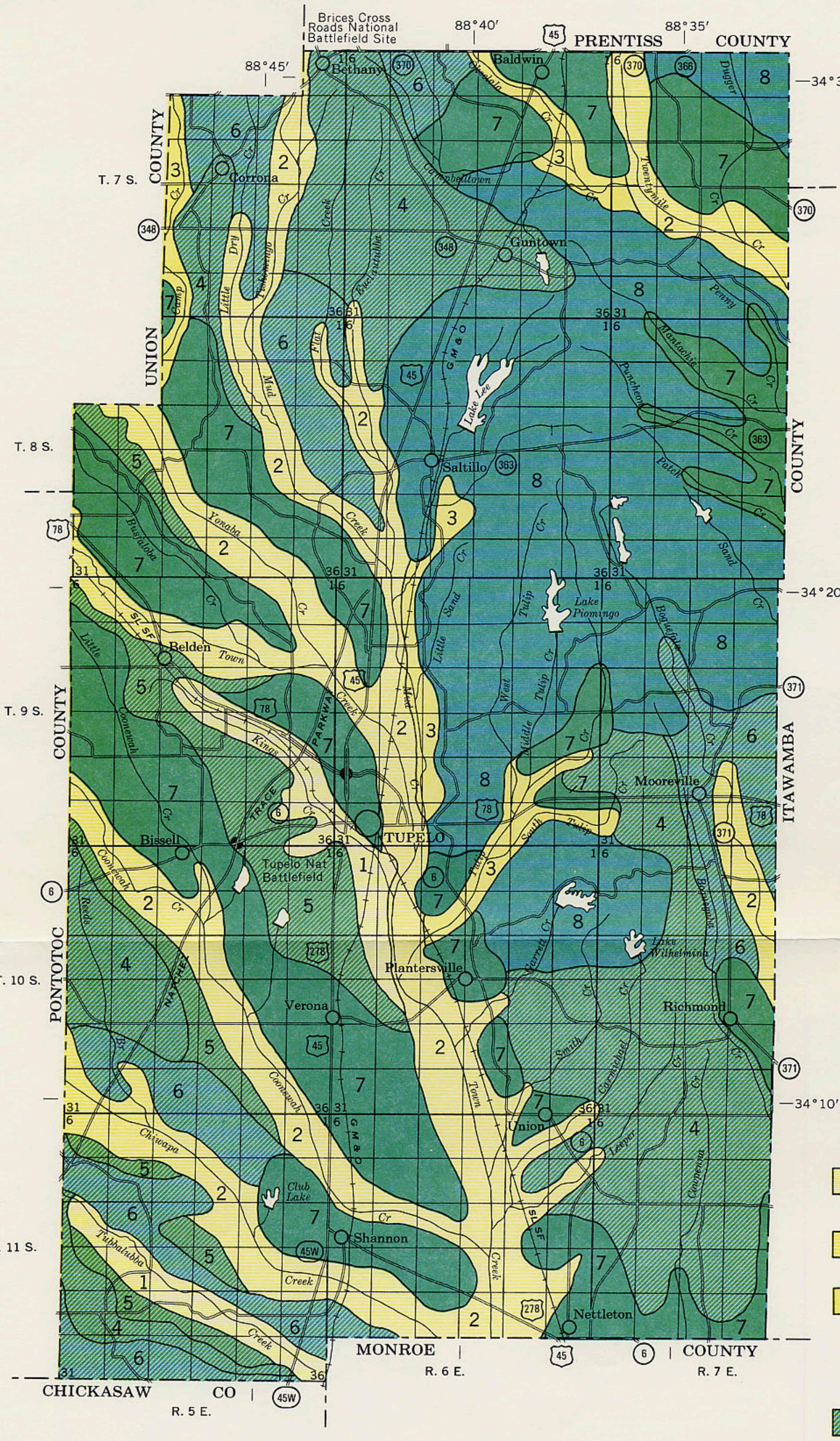
MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

LEE COUNTY, MISSISSIPPI

Scale 1:190 080

1 0 1 2 3 4 Miles



SOIL ASSOCIATIONS

AREAS DOMINATED BY SOILS SUBJECT TO FLOODING

1 Leeper-Catalpa association: Somewhat poorly drained and moderately well drained, medium acid to moderately alkaline, nearly level soils that have a clayey subsoil; on flood plains

2 Leeper-Marietta association: Somewhat poorly drained and moderately well drained, nearly level soils that have a clayey or loamy subsoil; on flood plains

3 Mantachie-Marietta association: Somewhat poorly drained and moderately well drained, nearly level soils that are loamy throughout; on flood plains

AREAS DOMINATED BY UNSTABLE CLAYEY SOILS OVER CHALK

4 Oktibbeha-Providence association: Moderately well drained and well drained soils that have a clayey or loamy subsoil; on uplands

5 Oktibbeha-Gullied land-Demopolis association: Moderately well drained to well drained, acid soils that have a clayey subsoil; calcareous Gullied land; and shallow soils between gullies

AREAS DOMINATED BY SOILS THAT HAVE A FRAGIPAN

6 Ora-Quitman-Oktibbeha association: Moderately well drained and somewhat poorly drained soils that have a fragipan and moderately well drained to well drained soils that have a clayey subsoil; on uplands

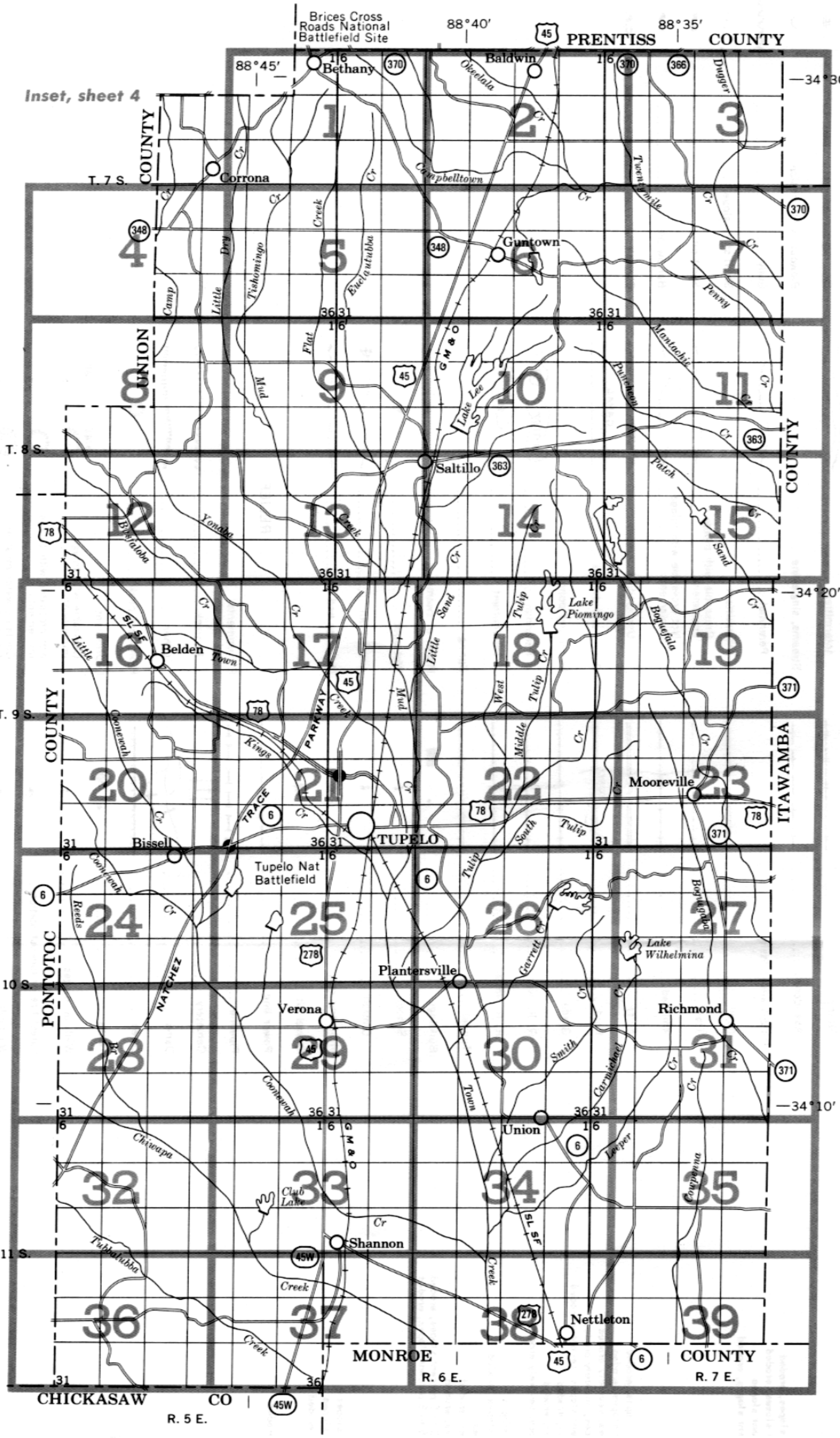
7 Ora-Prentiss-Quitman association: Moderately well drained and somewhat poorly drained soils that have a fragipan; on broad upland flats

AREAS DOMINATED BY DEEP, WELL-DRAINED SOILS

8 Cahaba-Luverne-Gullied land association: Well-drained soils that have a loamy or clayey subsoil and severely gullied land; on uplands

Published 1972

This map is for general planning. It shows only the major soils and does not contain sufficient detail for operational planning.



INDEX TO MAP SHEETS

LEE COUNTY, MISSISSIPPI

Scale 1:190080

1 0 1 2 3 4 Miles

N

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads

- Dual
- Good motor
- Poor motor
- Trail

Highway markers

- National Interstate
- U. S.
- State or county

Railroads

- Single track
- Multiple track
- Abandoned

Bridges and crossings

- Road
- Trail
- Railroad
- Ferry (FY)
- Ford (FORD)
- Grade
- R. R. over
- R. R. under

Tunnel

Buildings

- School
- Church

Mine and quarry

Gravel pit

Power line

Pipeline

Cemetery

Dams

Levee

Tanks

Well, oil or gas

Forest fire or lookout station

Windmill

BOUNDARIES

- National or state
- County
- Reservation
- Land grant
- Small park, cemetery, airport
- Land survey division corners

DRAINAGE

Streams, double-line

- Perennial
- Intermittent

Streams, single-line

- Perennial
- Intermittent
  - Crossable with tillage implements
  - Not crossable with tillage implements
  - Unclassified

Canals and ditches (CANAL)

Lakes and ponds

- Perennial (water, w)
- Intermittent (int)

Spring

Marsh or swamp

Wet spot

Alluvial fan

Drainage end

RELIEF

Escarpments

- Bedrock
- Other

Prominent peak

Depressions (Large, Small)

- Crossable with tillage implements
- Not crossable with tillage implements
- Contains water most of the time

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stoniness: Stony; Very stony
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gully
- Short steep slope
- Sand pit (S.P.)
- Borrow pit (B.P.)
- Clay pit (C.P.)

SOIL LEGEND

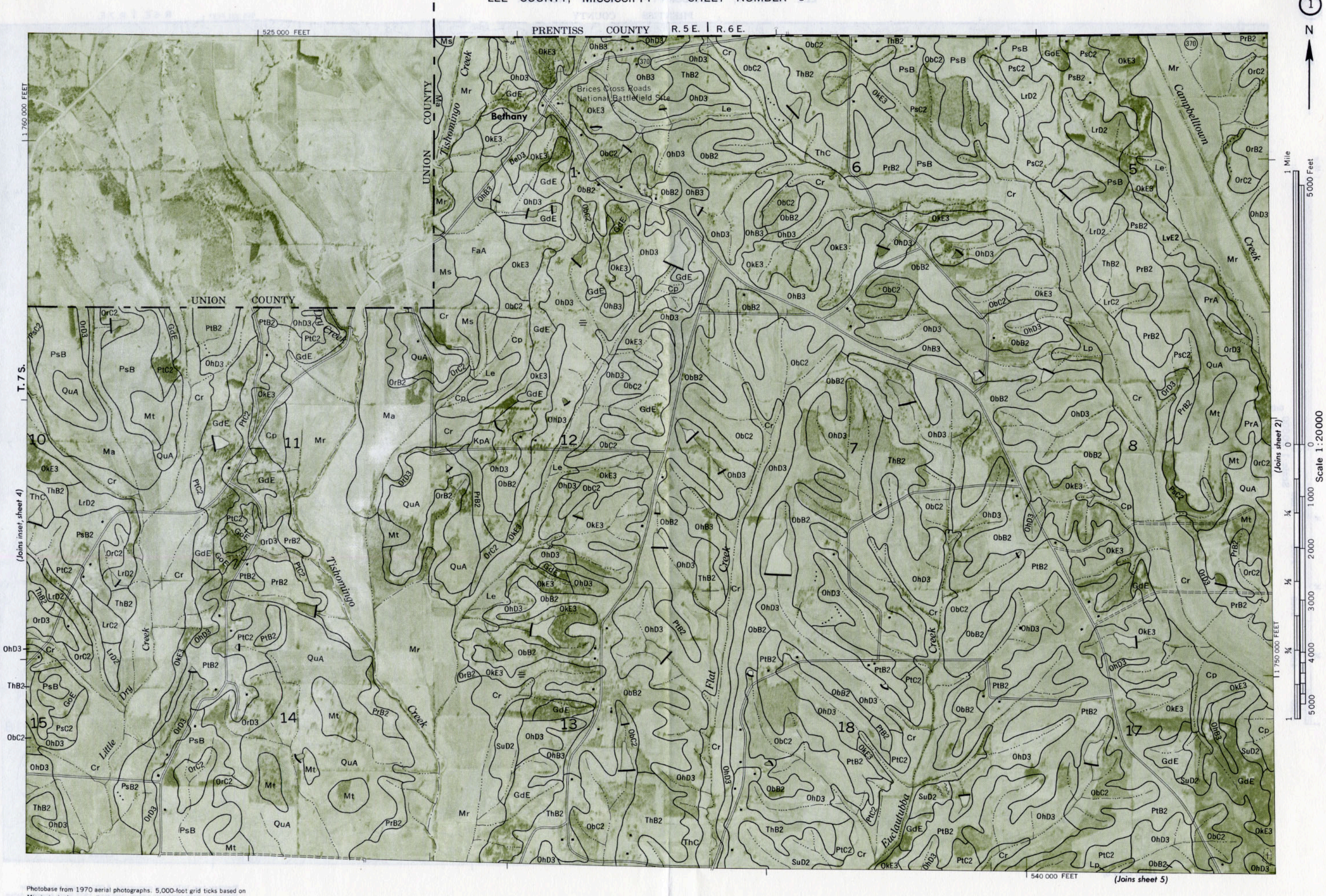
The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, E, or F, shows the slope. Most symbols without a slope letter are those of nearly level soils but the land type "Urban land" has a considerable range of slope. The number, 2 or 3, in a symbol shows that the soil is eroded or severely eroded.

SYMBOL	NAME
Ar	Arkabutla loam
CaC2	Cahaba and Ruston fine sandy loams, 5 to 8 percent slopes, eroded
CaE2	Cahaba and Ruston fine sandy loams, 12 to 17 percent slopes, eroded
CaF	Cahaba and Ruston fine sandy loams, 17 to 30 percent slopes
Cp	Catalpa silty clay loam
Cr	Commerce silt loam
DeD3	Demopolis silty clay loam, 5 to 12 percent slopes, severely eroded
FaA	Falkner silt loam, 0 to 2 percent slopes
GdE	Gullied land-Demopolis complex, 5 to 20 percent slopes
GoE	Gullied land-Ora complex, 5 to 20 percent slopes
Kn	Kinston fine sandy loam
KpA	Kipling silt loam, 0 to 2 percent slopes
Le	Leeper fine sandy loam
Lp	Leeper silty clay loam
LrC2	Luverne fine sandy loam, 5 to 8 percent slopes, eroded
LrD2	Luverne fine sandy loam, 8 to 12 percent slopes, eroded
LuF	Luverne and Cahaba soils, 17 to 30 percent slopes
LvE2	Luverne and Ruston soils, 12 to 17 percent slopes, eroded
Ma	Mantachie fine sandy loam
Mr	Marietta loam
Ms	Mashulaville fine sandy loam
Mt	Mashulaville silt loam
My	Myatt fine sandy loam
ObB2	Oktibbeha silty clay loam, 2 to 5 percent slopes, eroded
ObC2	Oktibbeha silty clay loam, 5 to 8 percent slopes, eroded
OhB3	Oktibbeha silty clay, 2 to 5 percent slopes, severely eroded
OhD3	Oktibbeha silty clay, 5 to 12 percent slopes, severely eroded
OkE3	Oktibbeha and Sumter soils, 8 to 17 percent slopes, severely eroded
OrB2	Ora fine sandy loam, 2 to 5 percent slopes, eroded
OrC2	Ora fine sandy loam, 5 to 8 percent slopes, eroded
OrD3	Ora fine sandy loam, 8 to 12 percent slopes, severely eroded
PrA	Prentiss fine sandy loam, 0 to 2 percent slopes
PrB2	Prentiss fine sandy loam, 2 to 5 percent slopes, eroded
PsB	Providence silt loam, 2 to 5 percent slopes
PsB2	Providence silt loam, 2 to 5 percent slopes, eroded
PsC2	Providence silt loam, 5 to 8 percent slopes, eroded
PtB2	Providence silt loam, heavy substratum, 2 to 5 percent slopes, eroded
PtC2	Providence silt loam, heavy substratum, 5 to 8 percent slopes, eroded
QuA	Quitman silt loam, 0 to 2 percent slopes
Ro	Robinsonville soils
SaA	Savannah fine sandy loam, 0 to 2 percent slopes
SaB	Savannah fine sandy loam, 2 to 5 percent slopes
SuD2	Sumter silty clay, 5 to 12 percent slopes, eroded
ThA	Tippah silt loam, 0 to 2 percent slopes
ThB2	Tippah silt loam, 2 to 5 percent slopes, eroded
ThC	Tippah silt loam, 5 to 8 percent slopes
Tu	Tuscumbia silty clay loam
Un	Una silty clay
Ur	Urban land

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 1

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 1



Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

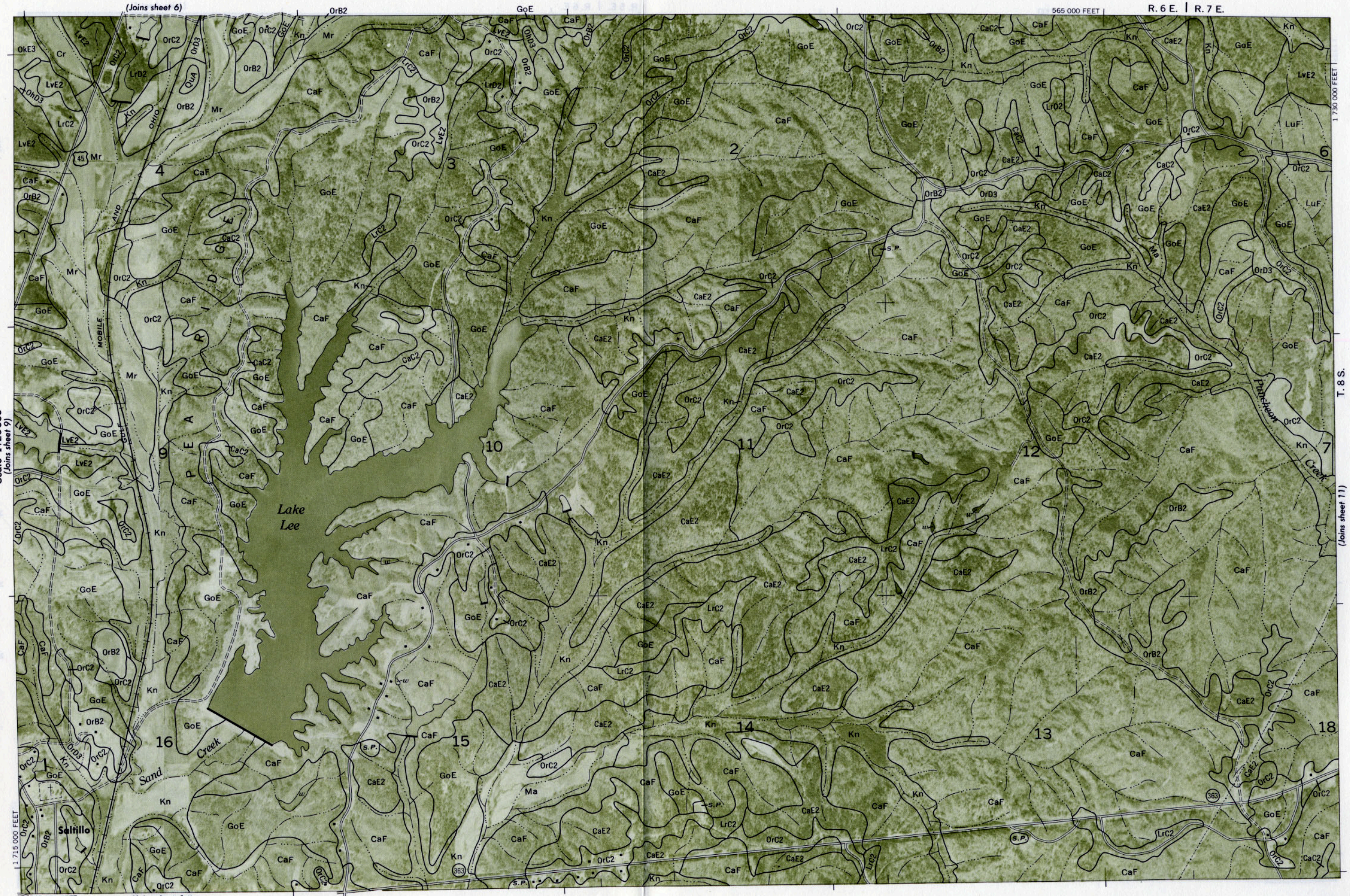
N

1 Mile

5000 Feet

Scale 1:20000

0 1000 2000 3000 4000 5000



LEE COUNTY, MISSISSIPPI NO. 10

Land division corners are approximately positioned on this map.

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Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone, 1927 North American datum.

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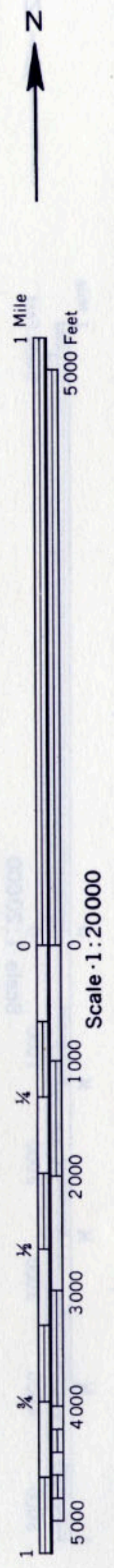
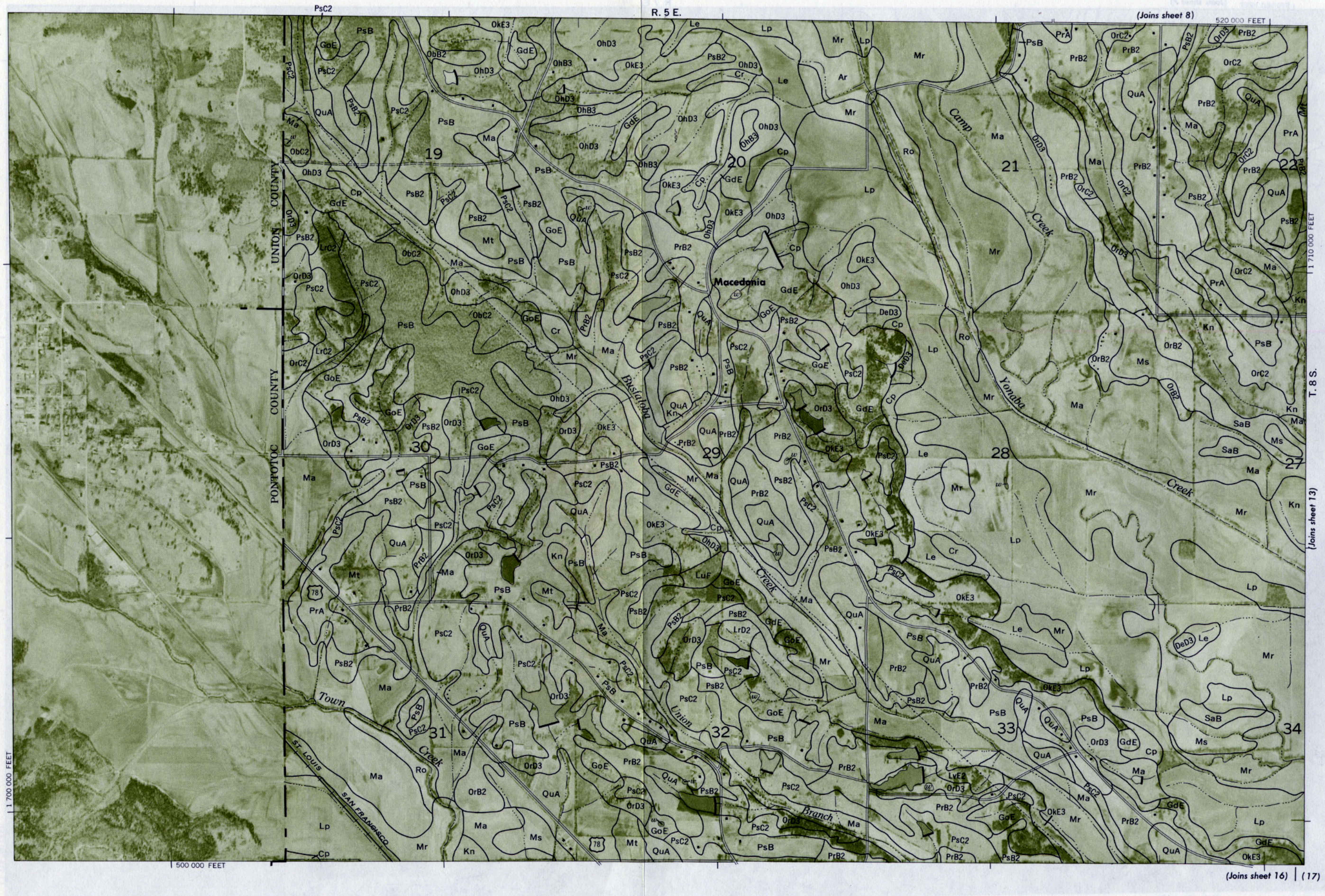
LEE COUNTY, MISSISSIPPI NO. 11

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 12





LEE COUNTY, MISSISSIPPI NO. 12

Land division corners are approximately positioned on this map.

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

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Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 13

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

14

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 14

LEE COUNTY, MISSISSIPPI NO. 14

Land division corners are approximately positioned on this map.

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Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

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Land division corners are approximately positioned on this map.

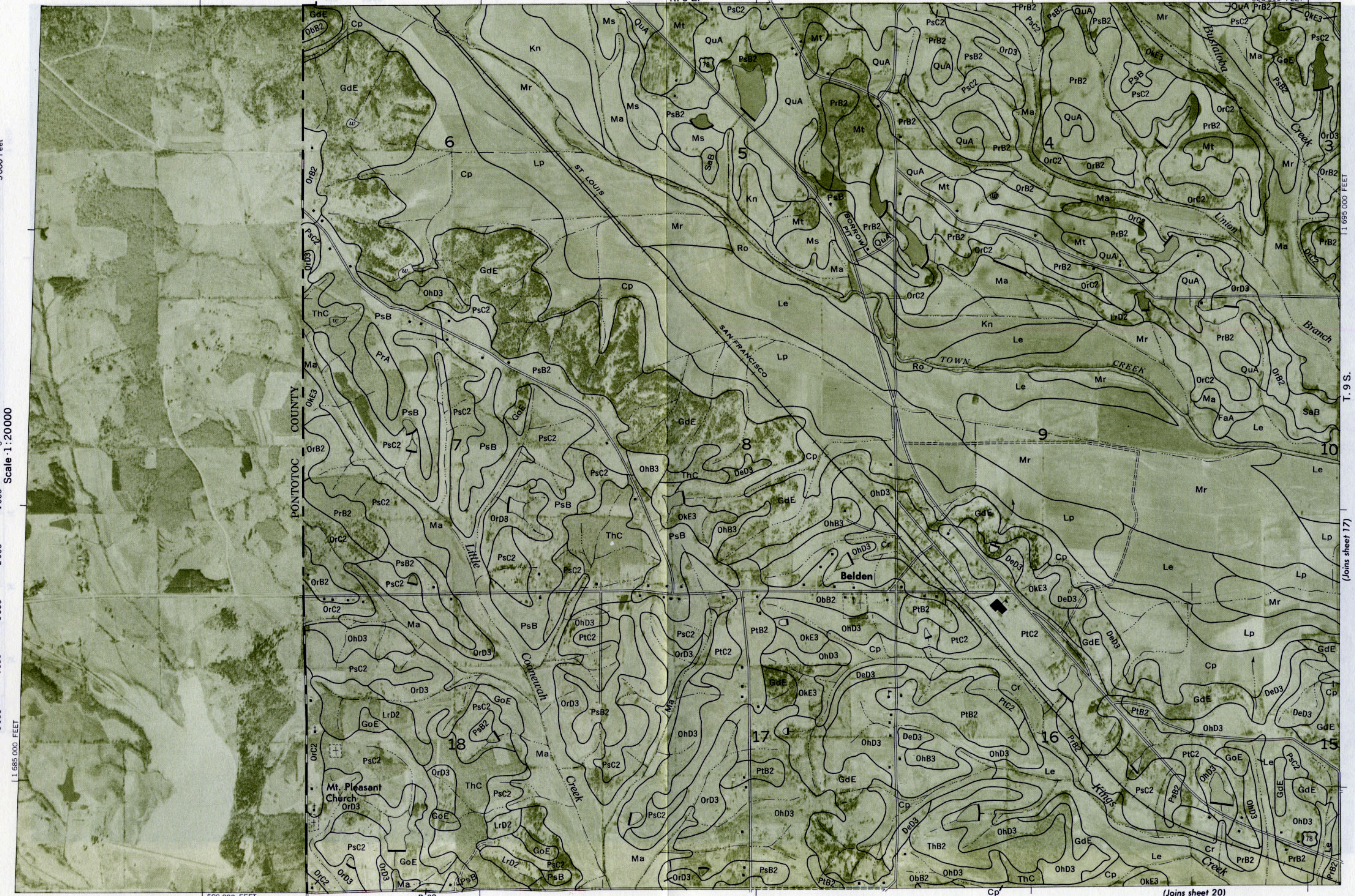
LEE COUNTY, MISSISSIPPI NO. 15

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

N

Scale 1:20000

1 Mile | 5000 Feet



LEE COUNTY, MISSISSIPPI NO. 16

Land division corners are approximately positioned on this map.

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

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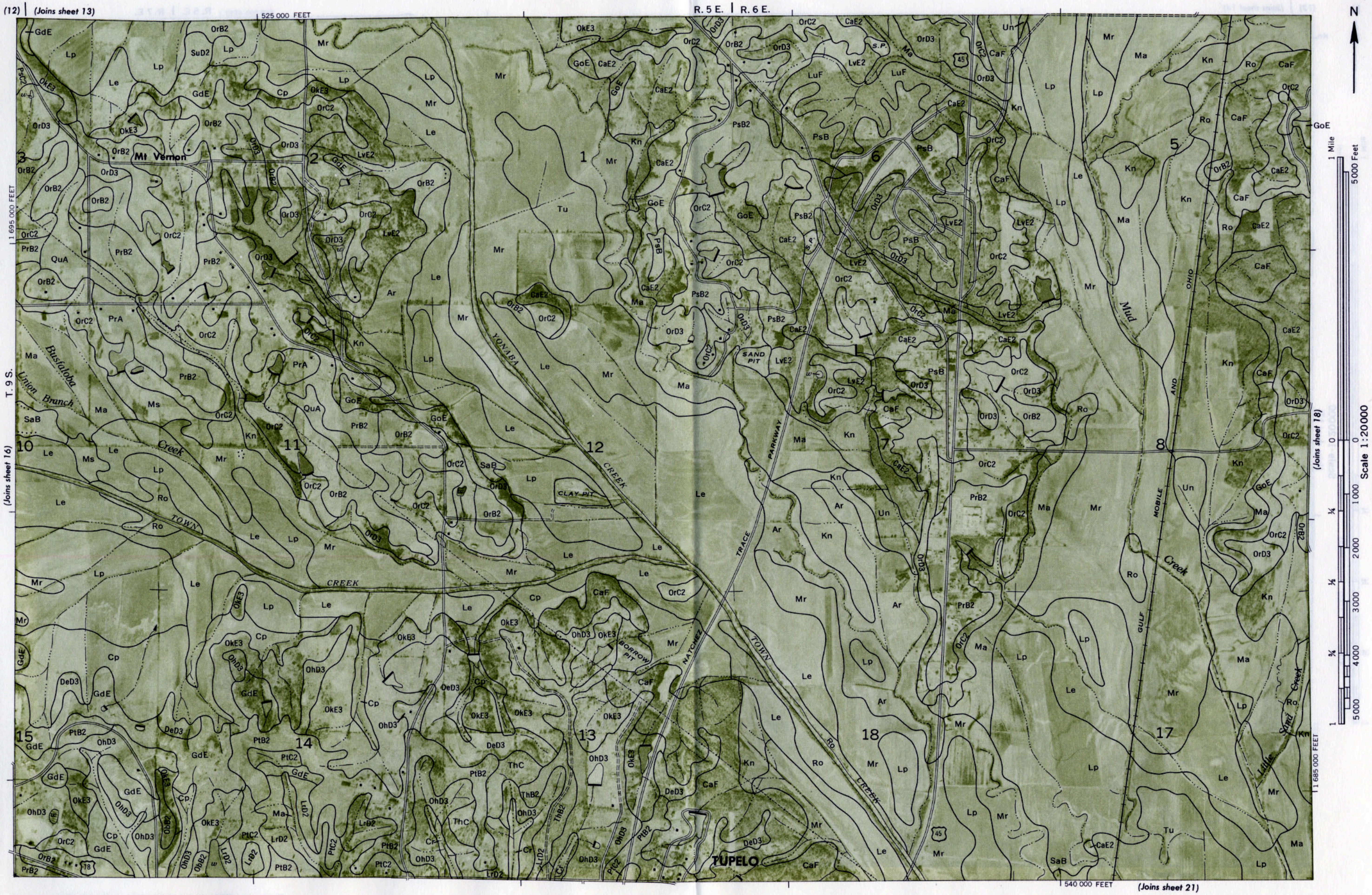
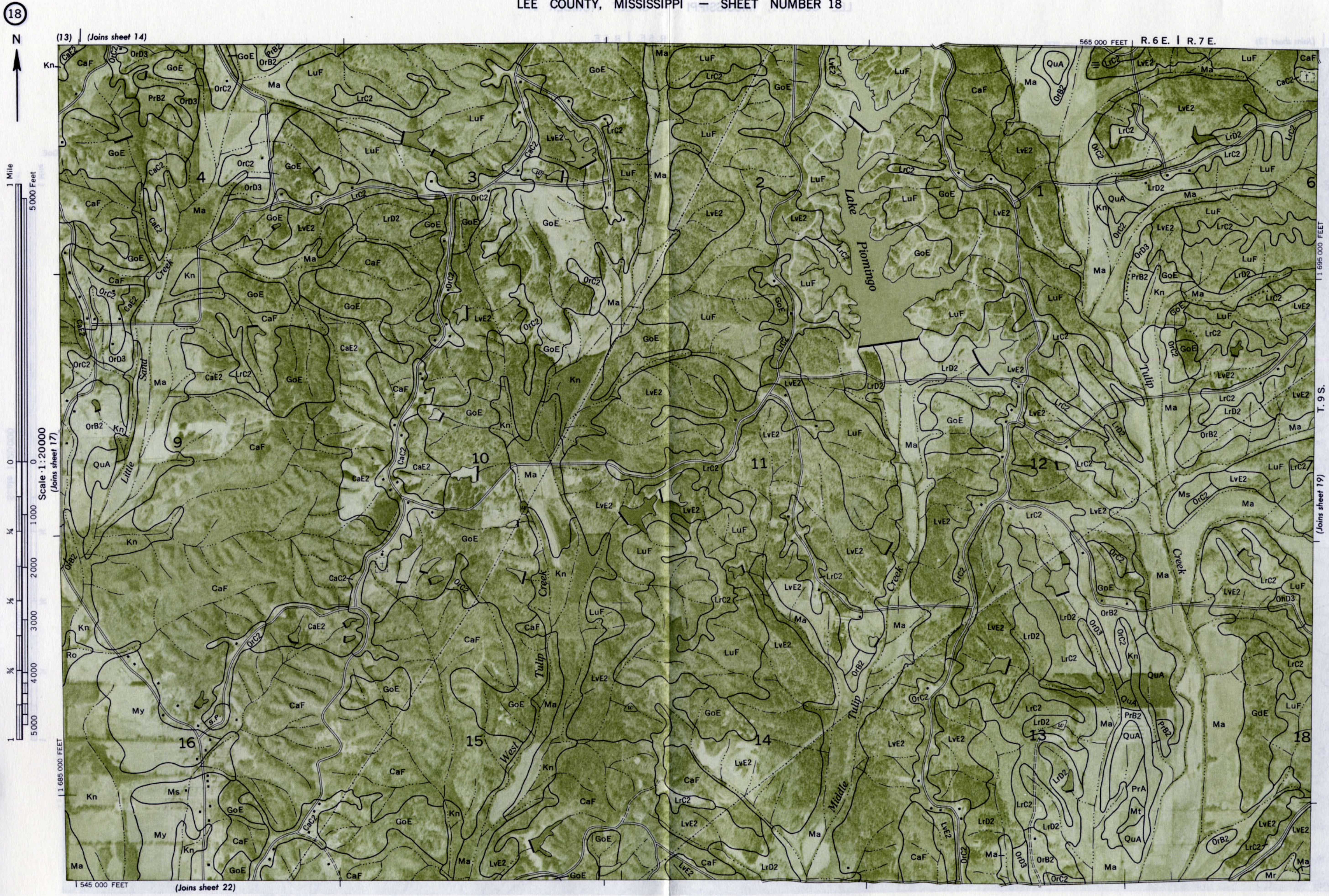
Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 17



Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

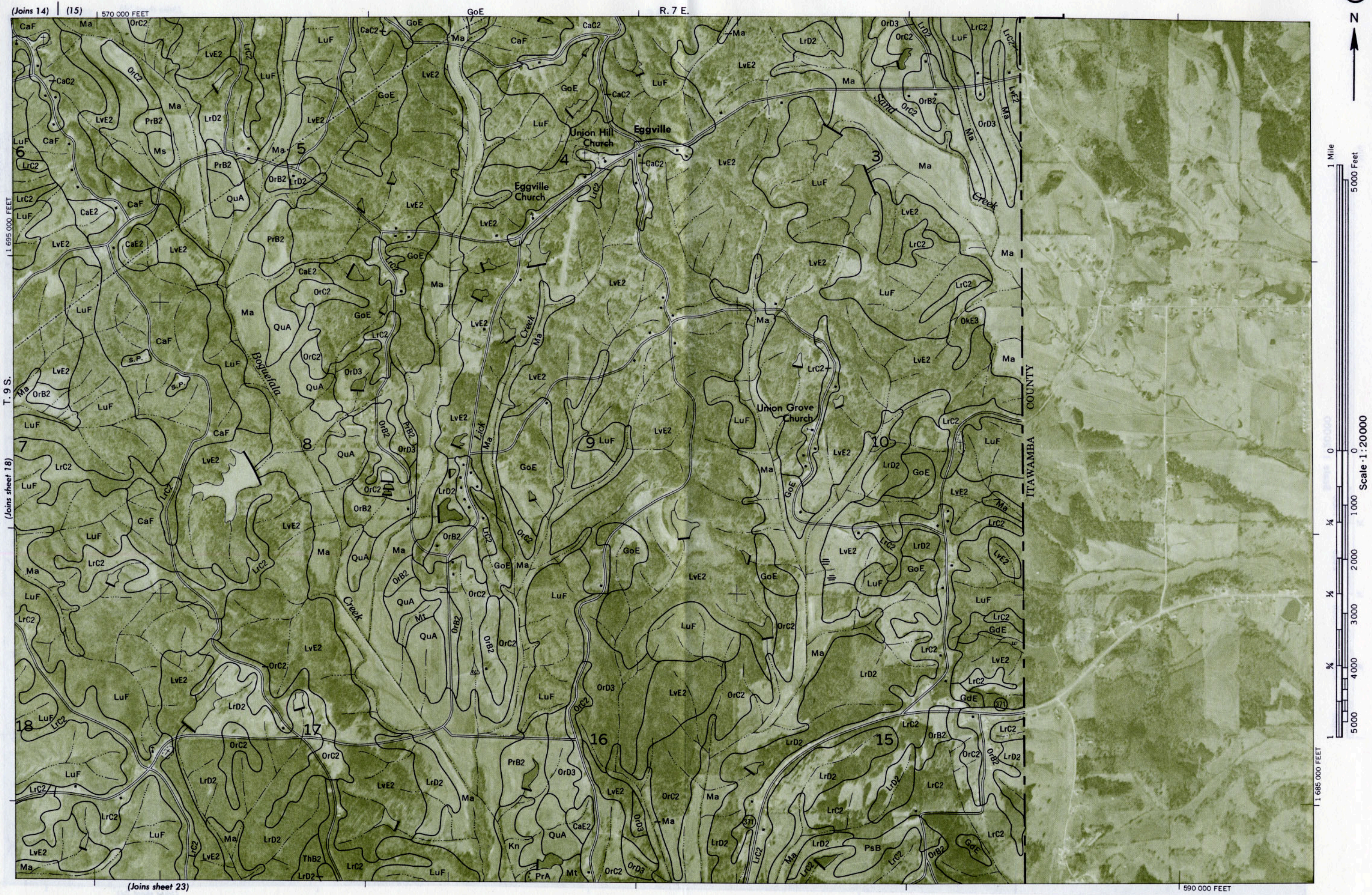


LEE COUNTY, MISSISSIPPI, NO. 18

Land division corners are approximately positioned on this map.

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.



This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 2

1 Mile
5000 Feet
Scale 1:20000
0 1000 2000 3000 4000 5000

LEE COUNTY, MISSISSIPPI NO. 2

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Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 20

N

1 Mile
5000 Feet
Scale 1:20000

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI NO. 20

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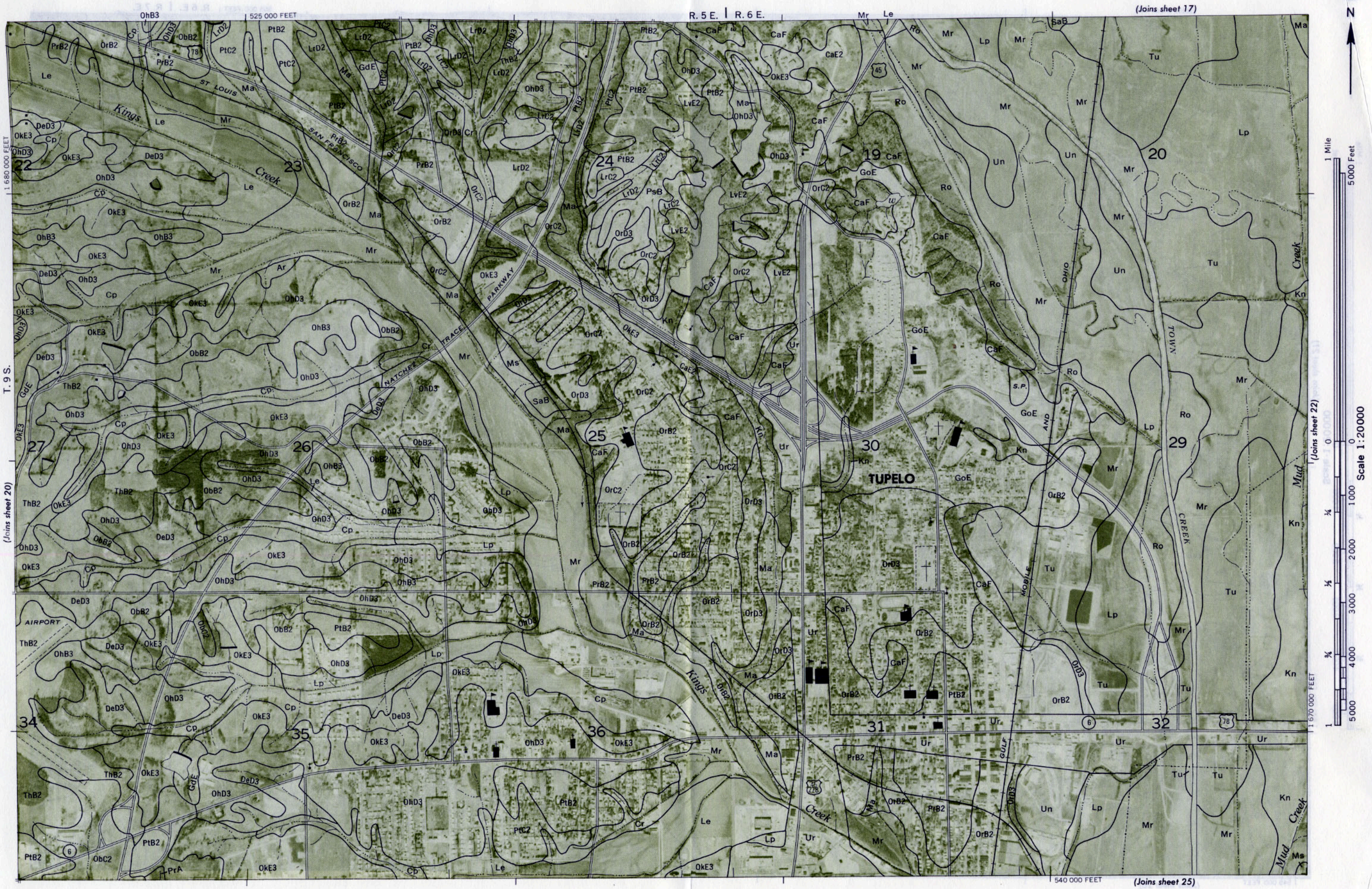
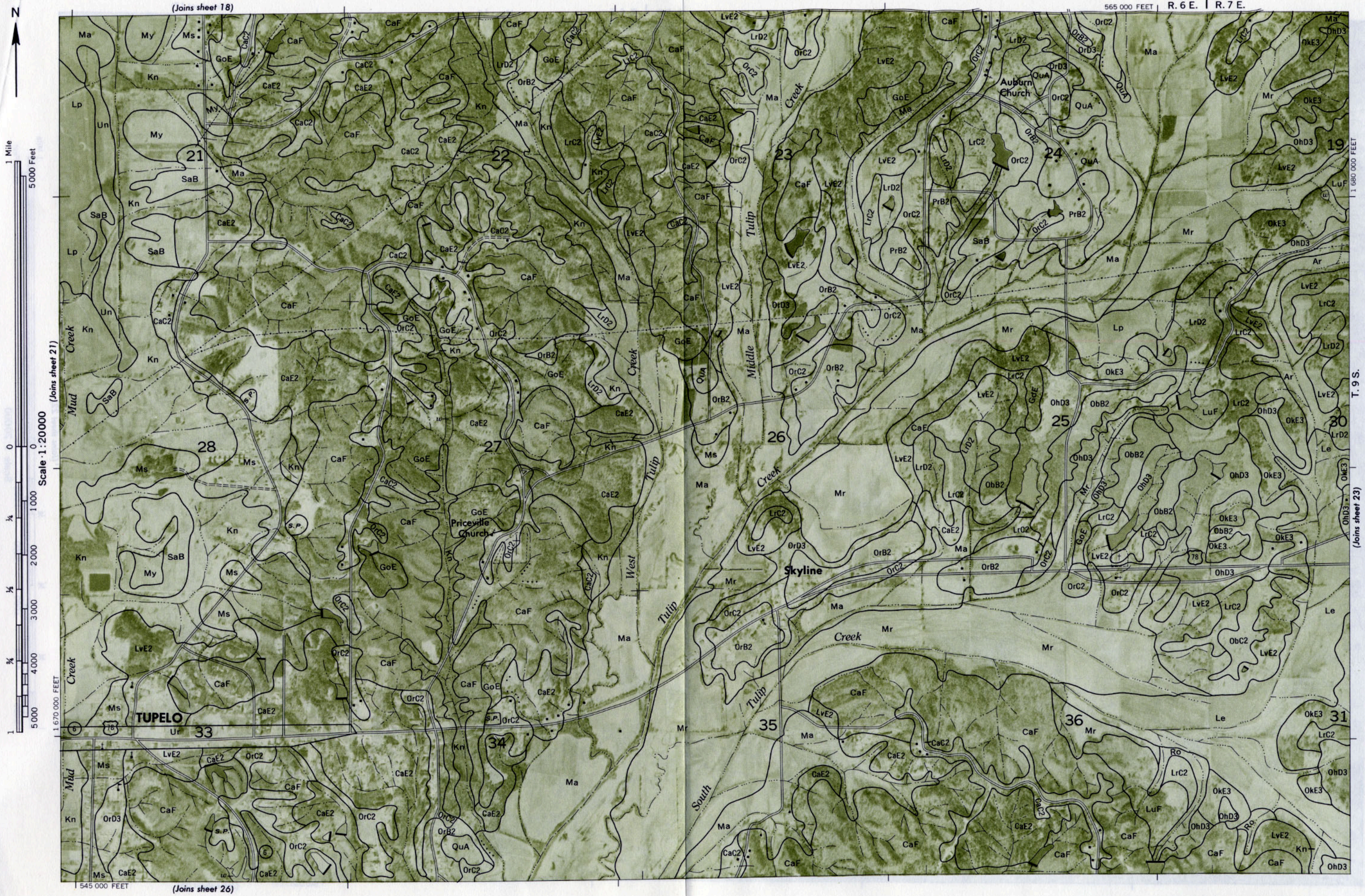
Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 21



Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

22



Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI NO. 22

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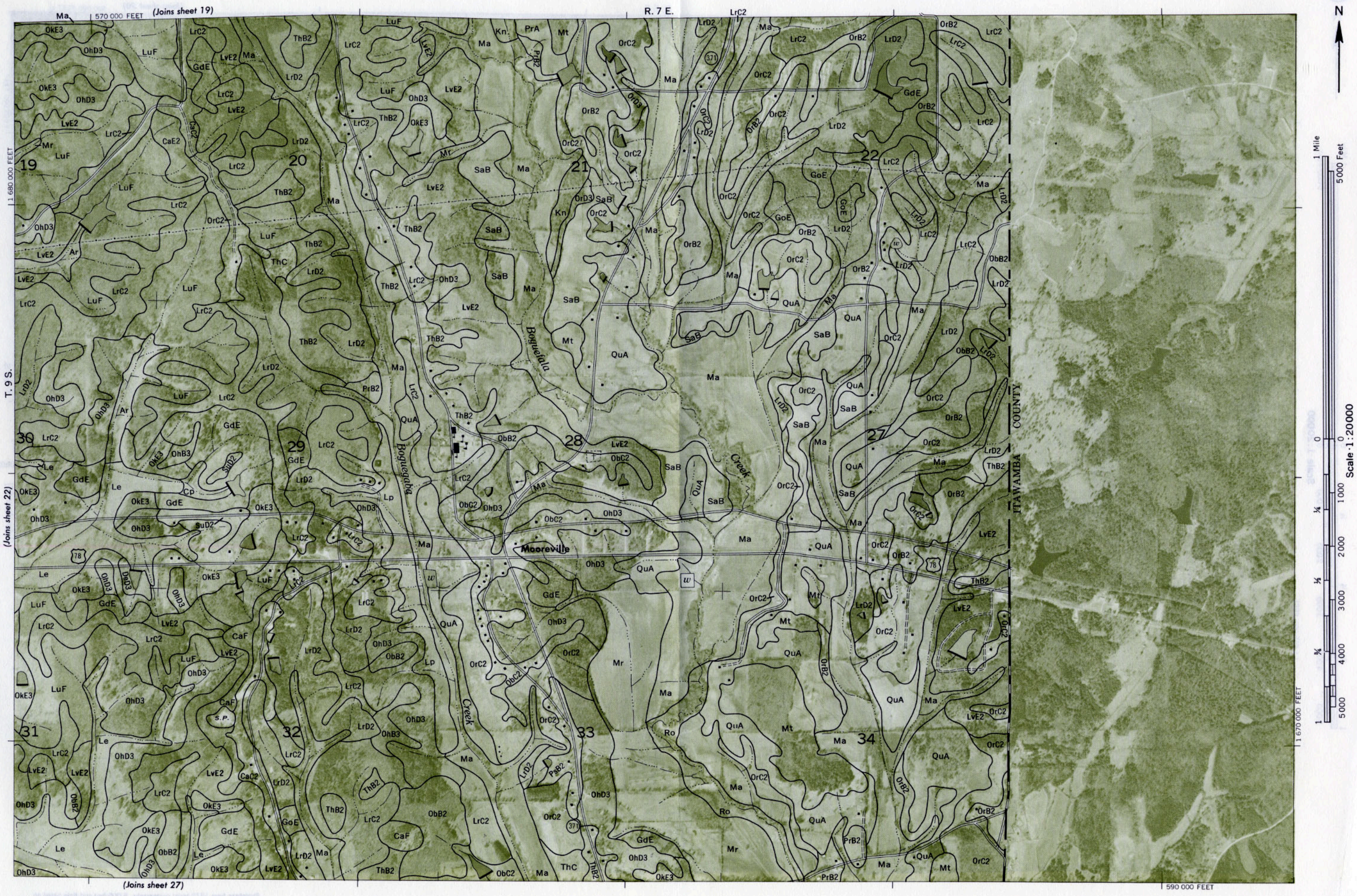

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

Land division corners are approximately positioned on this map.

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LEE COUNTY, MISSISSIPPI NO. 24

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

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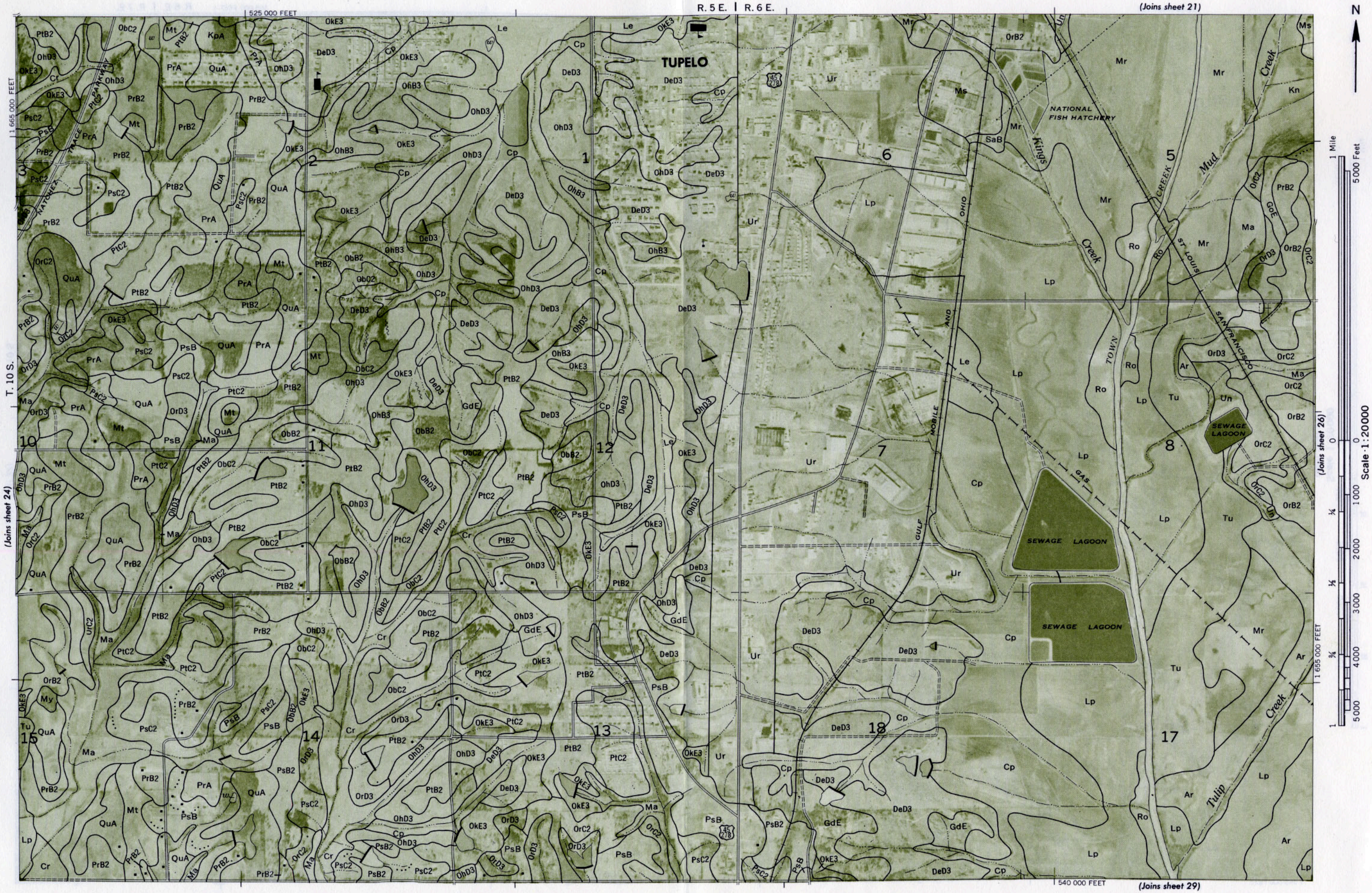
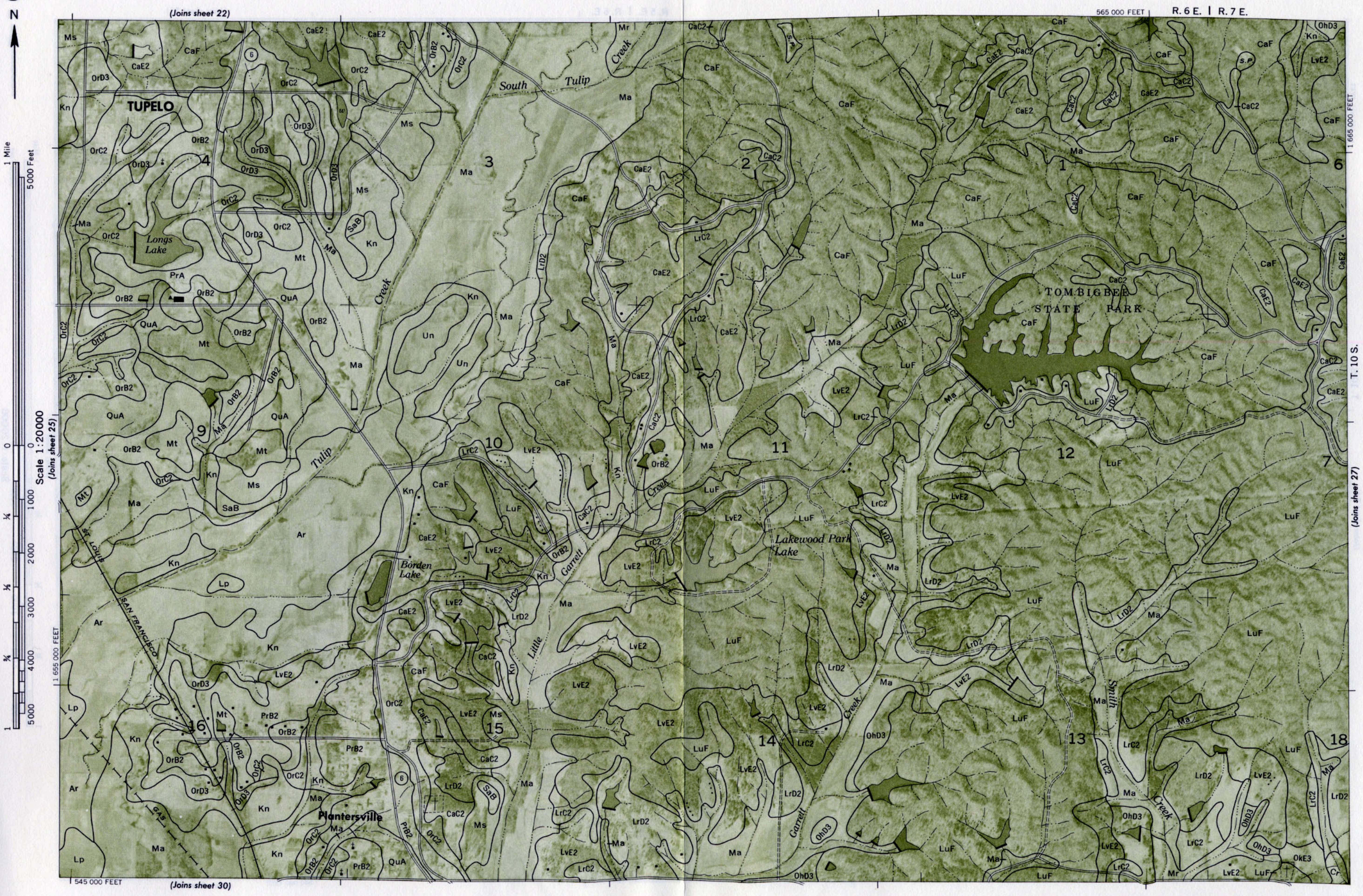


Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 26



Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI NO. 26

Land division corners are approximately positioned on this map.

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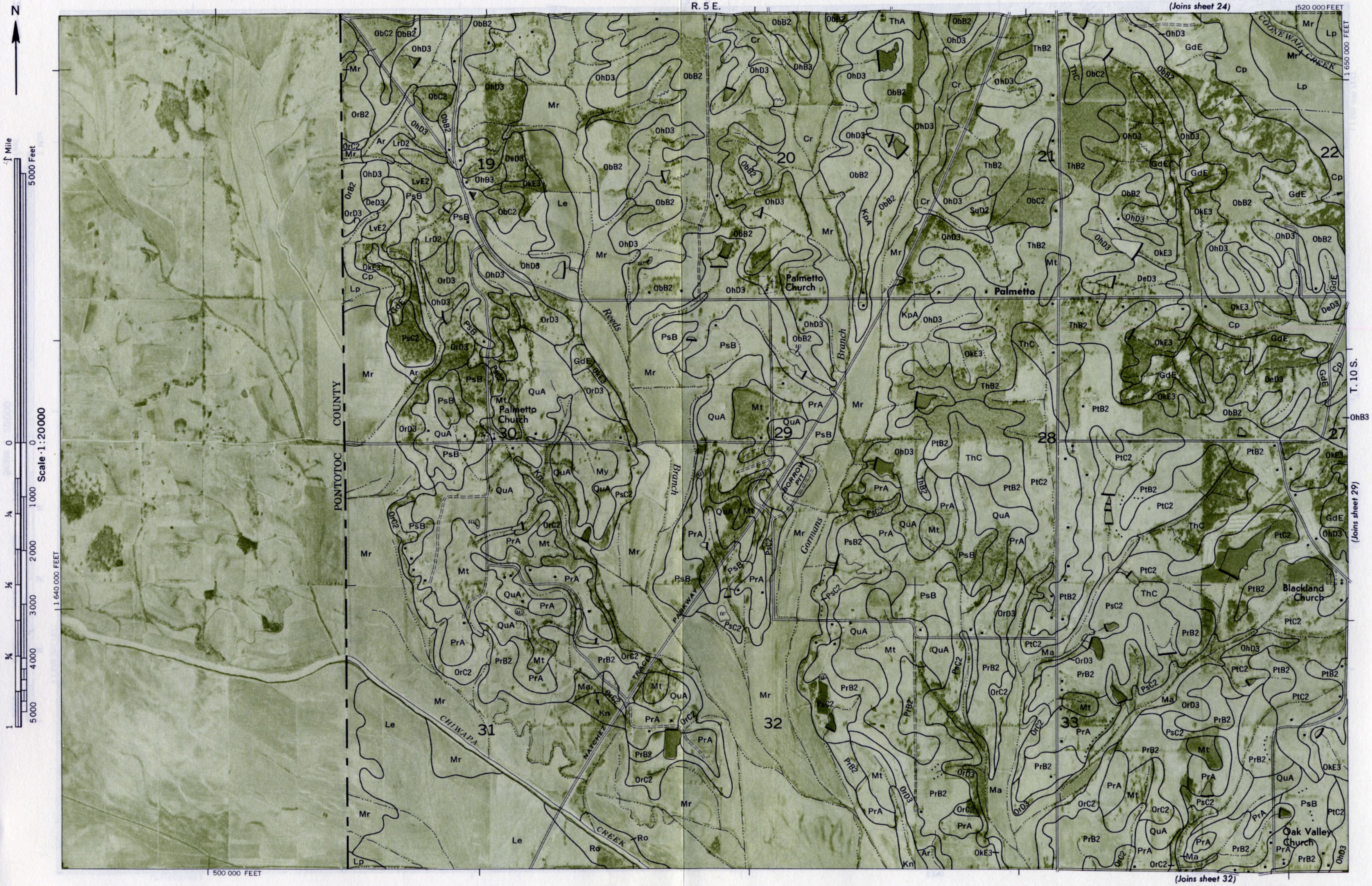
Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 27

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 28

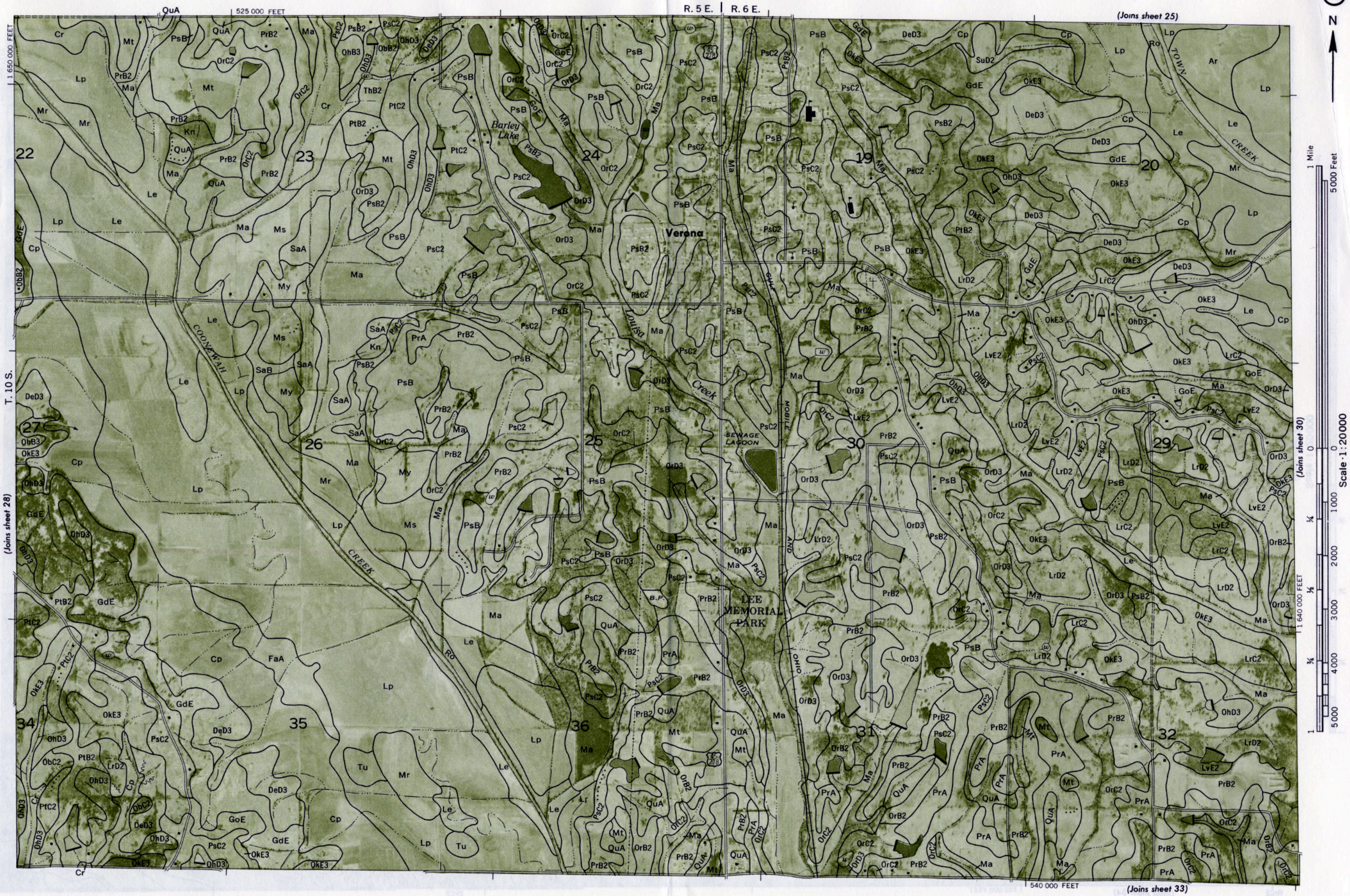


This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.

Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 28

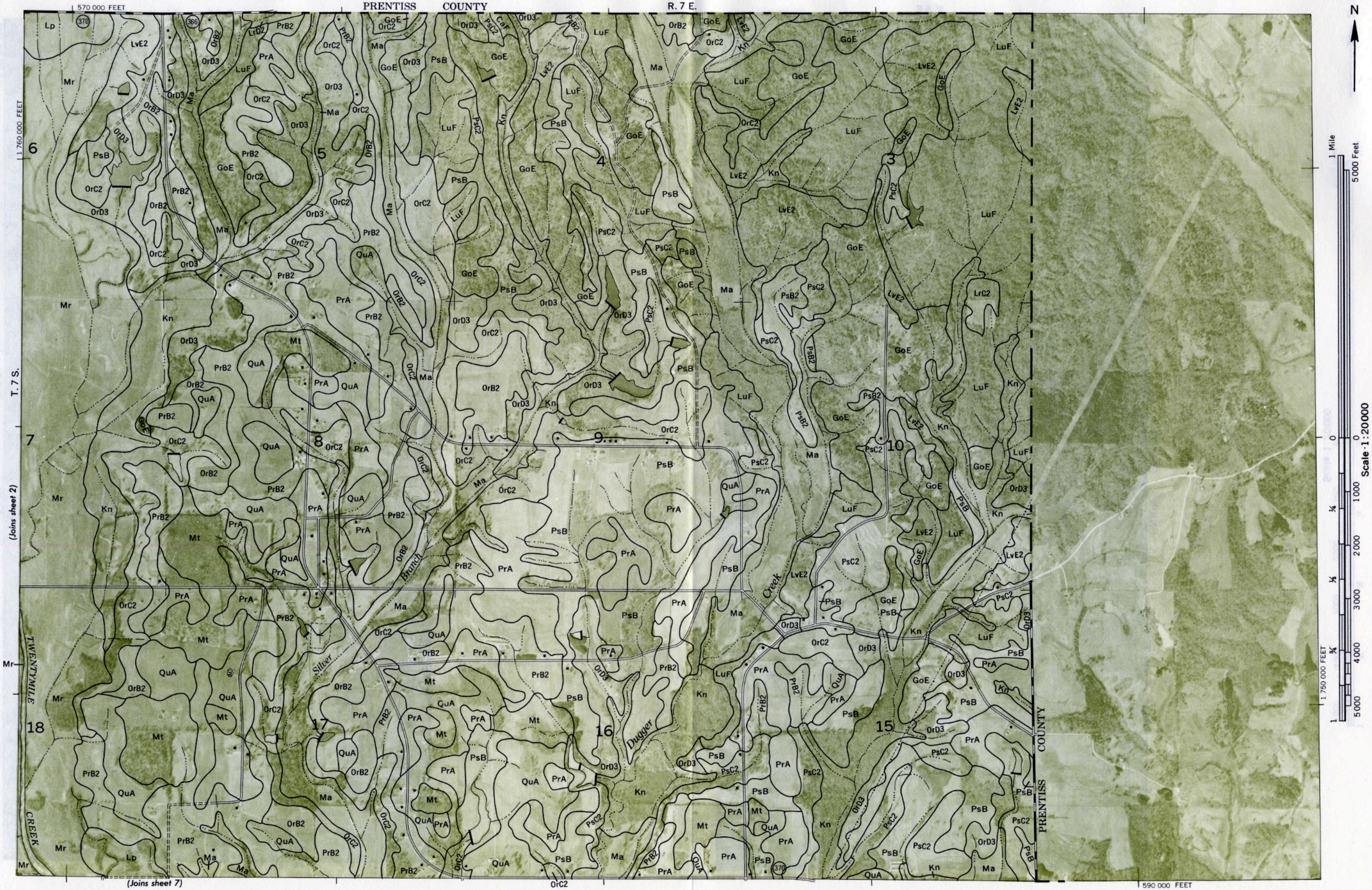
Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.



This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 29

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

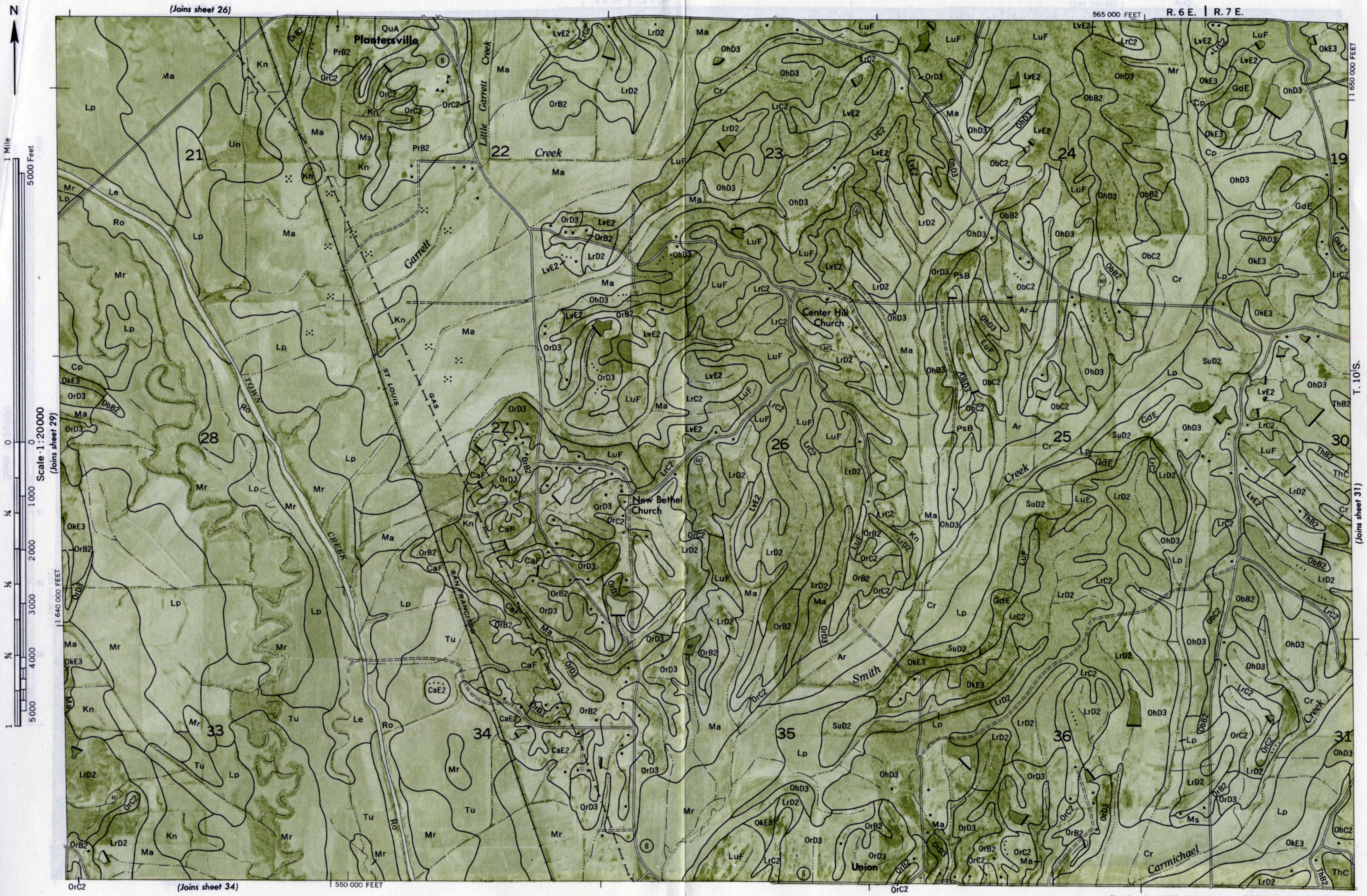


This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 3

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 30



Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI NO. 30

Land division corners are approximately positioned on this map.

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.

LEE COUNTY, MISSISSIPPI NO. 31

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI, NO. 32

Land division corners are approximately positioned on this map.

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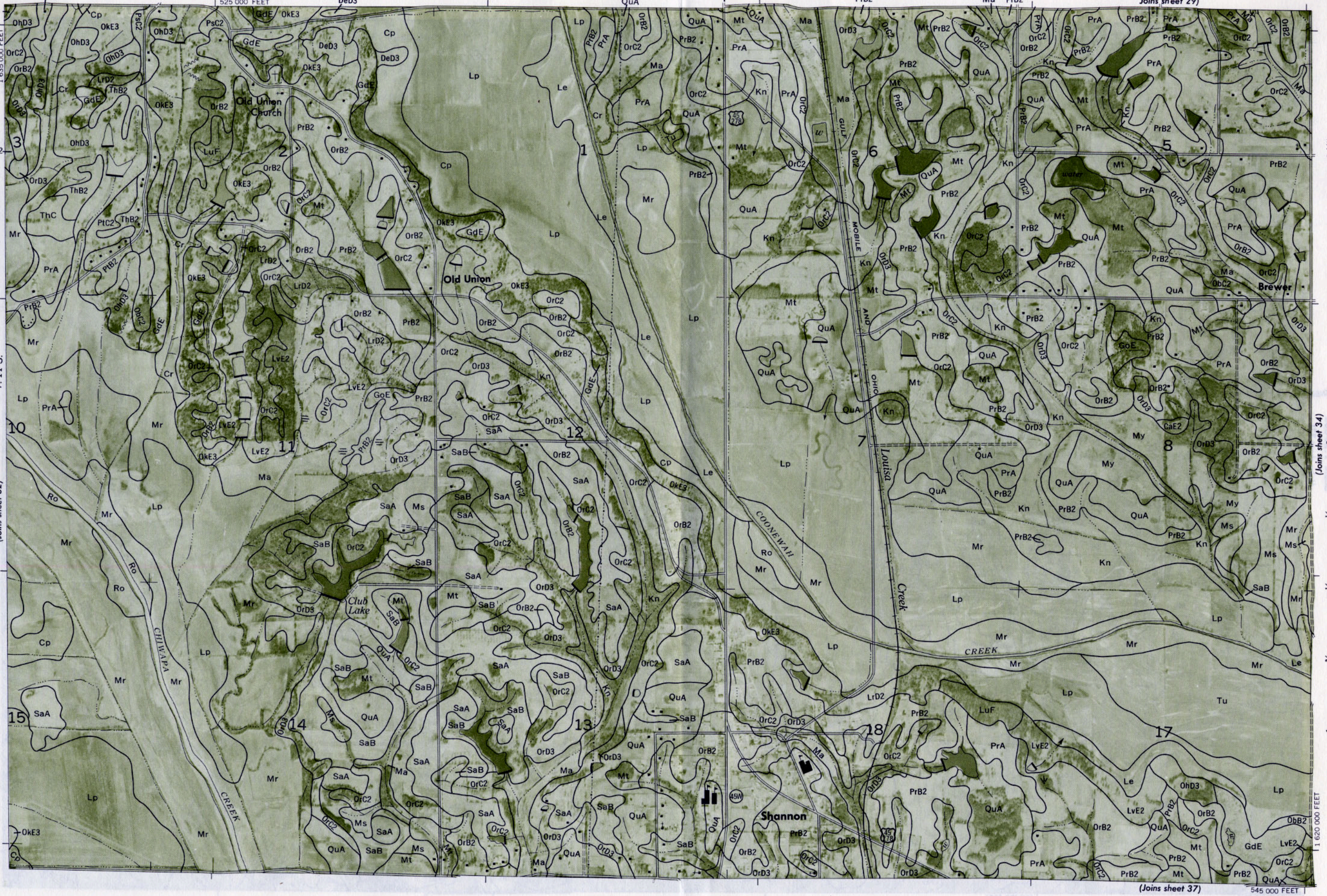
Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.



N

1 Mile
5000 Feet

Scale 1:20000

0 1000 2000 3000 4000 5000

¼ ½ ¾ 1

LEE COUNTY, MISSISSIPPI NO. 33

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

34

N

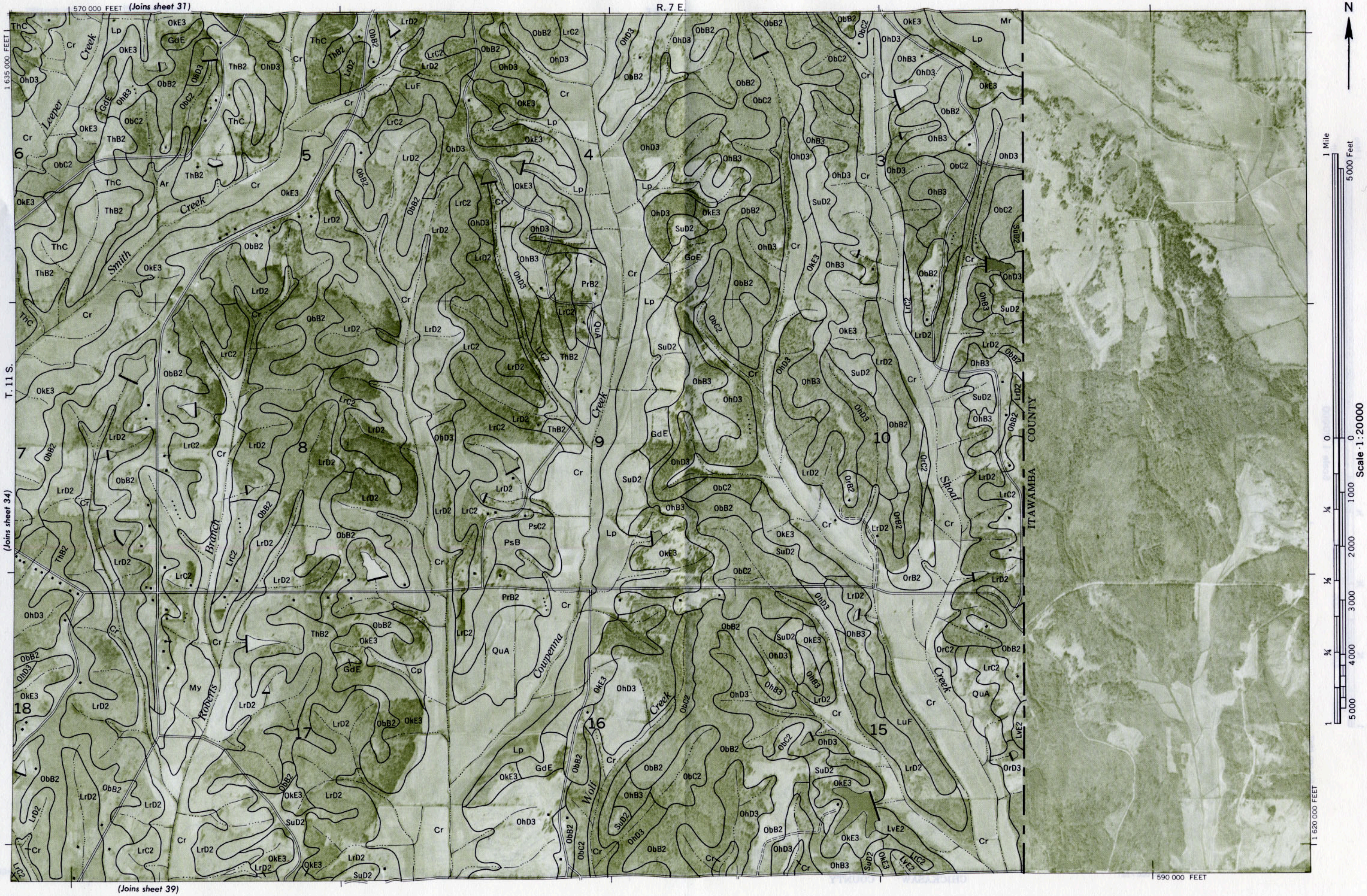
1 Mile
5000 Feet
Scale 1:20000
0 1000 2000 3000 4000 5000
0 ¼ ½ ¾ 1

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI NO. 34

Land division corners are approximately positioned on this map.

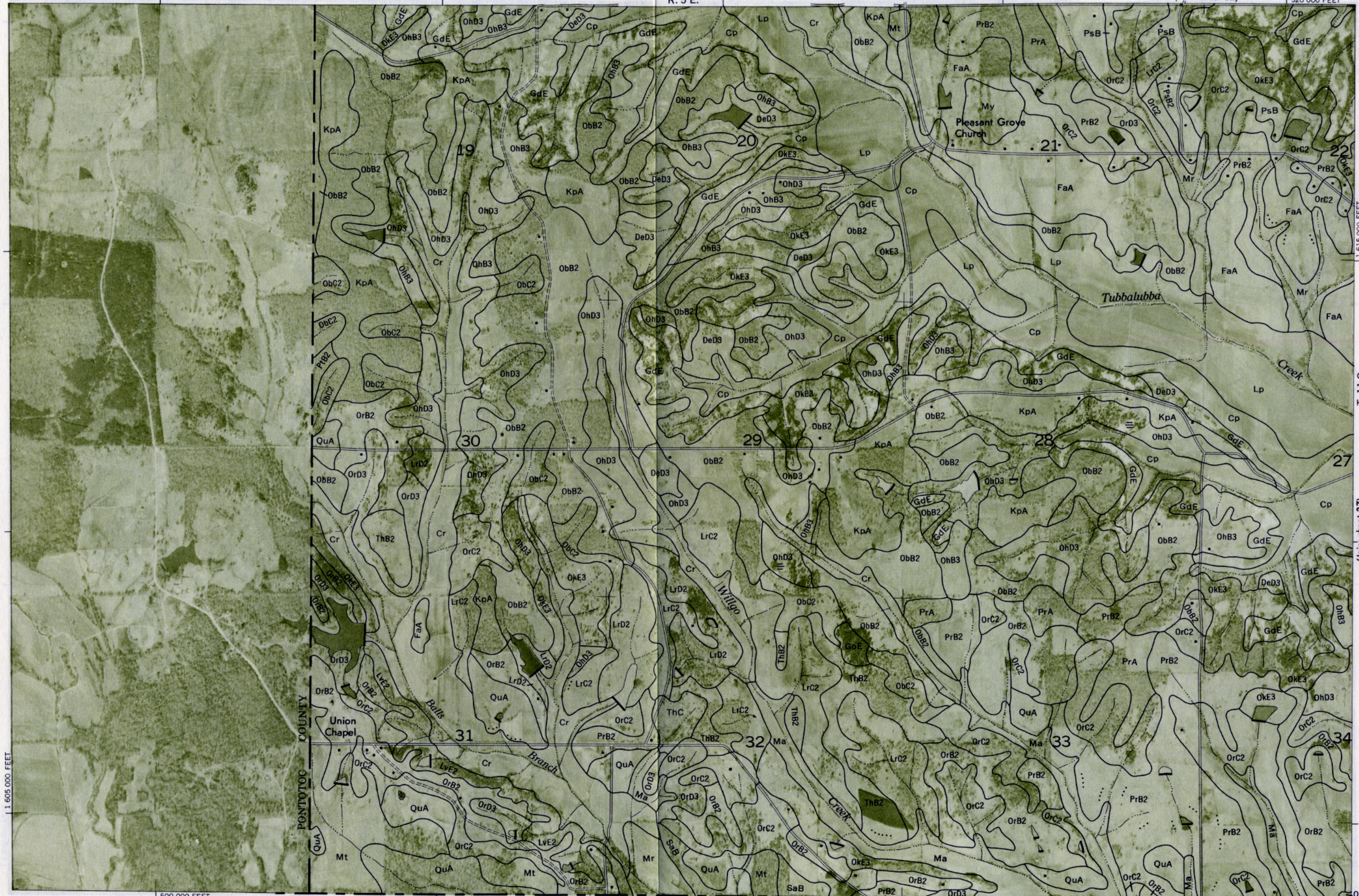
This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.



This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 35

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

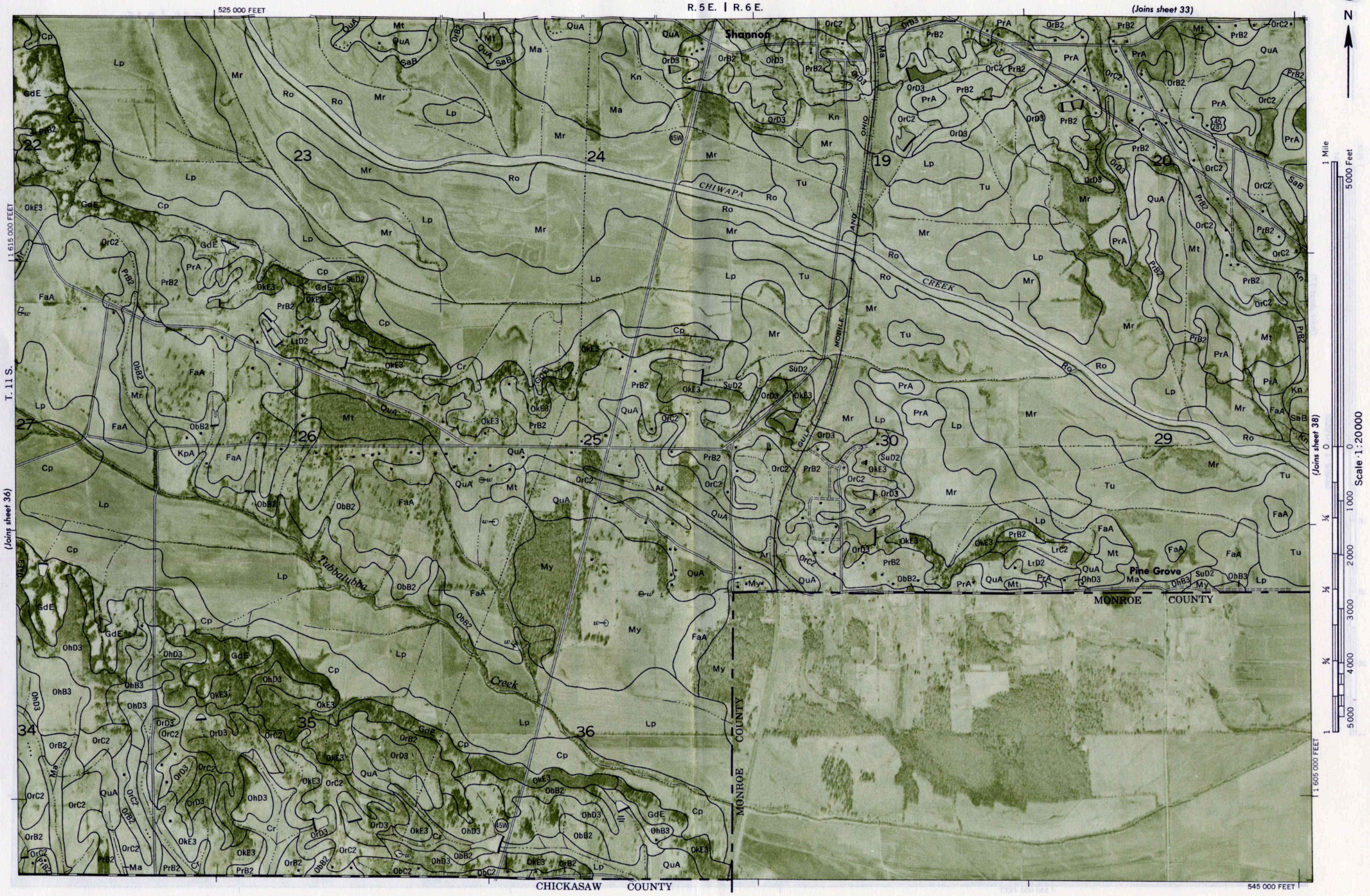


LEE COUNTY, MISSISSIPPI NO. 36

Land division corners are approximately positioned on this map.

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.



This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 37

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 38

N

1 Mile
5000 Feet
0
Scale 1:20000
1000
2000
3000
4000
5000

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI NO. 38

Land division corners are approximately positioned on this map.

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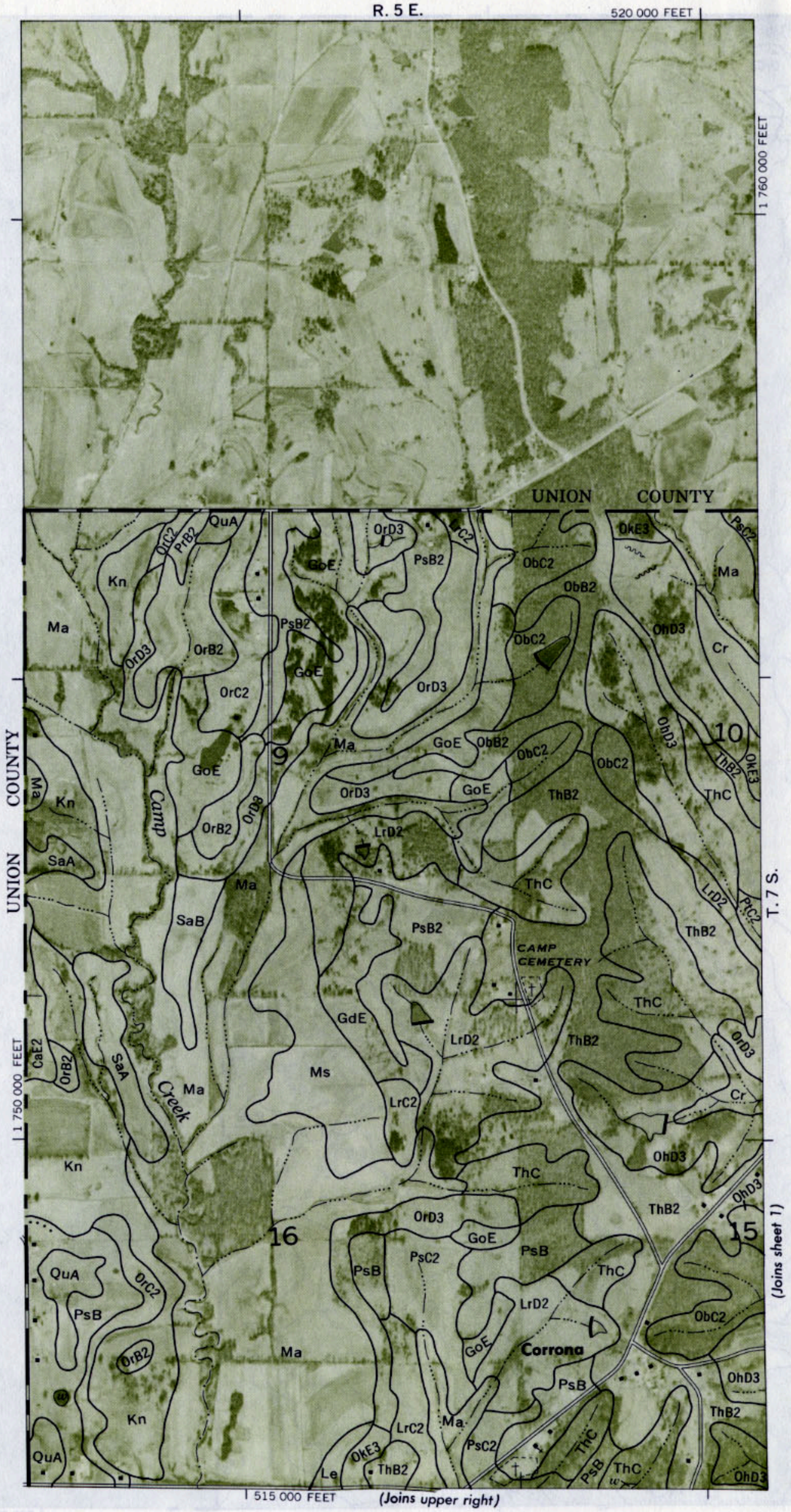
LEE COUNTY, MISSISSIPPI NO. 39

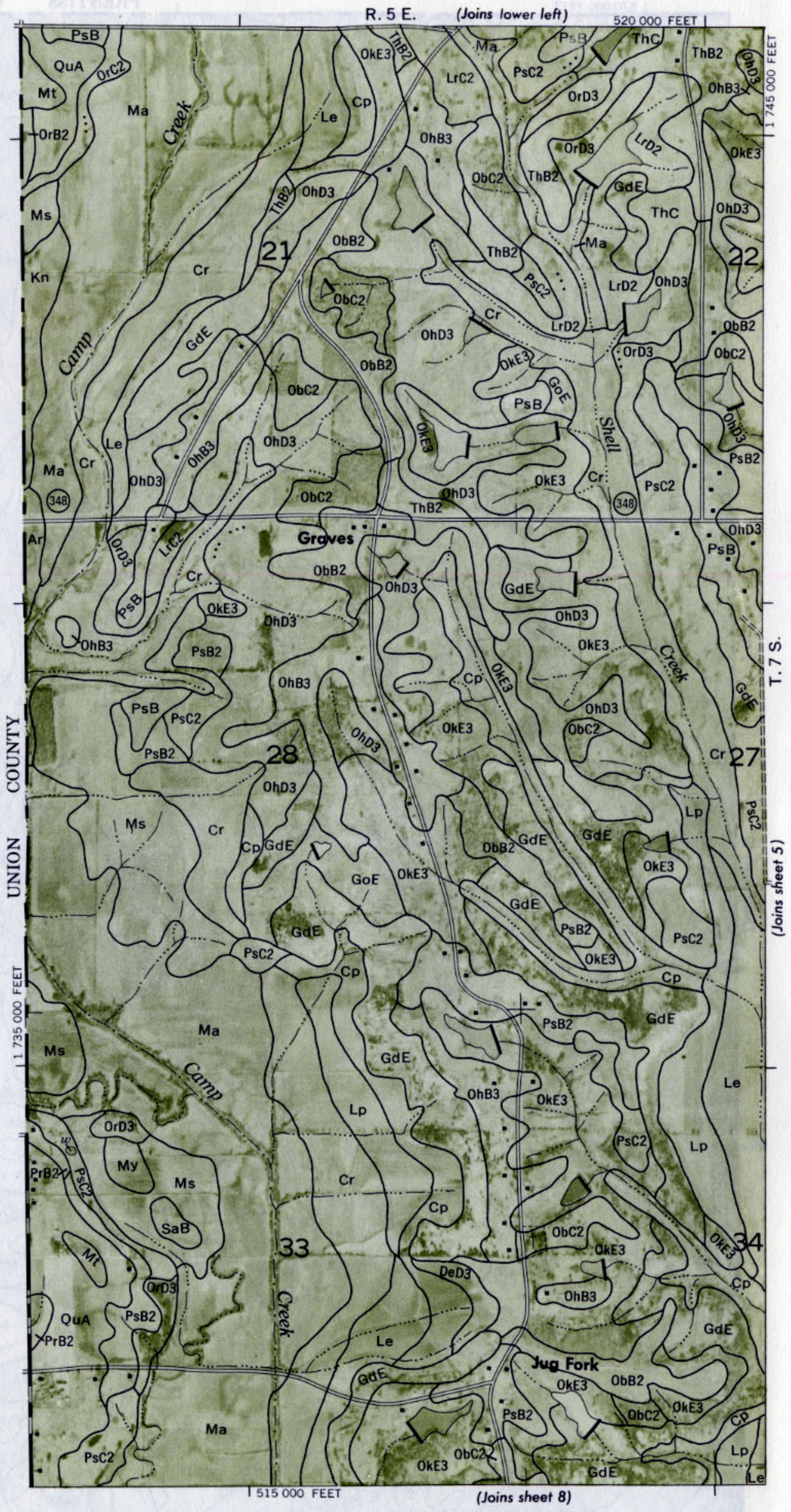
Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

N

1 Mile 5000 Feet

Scale 1:20000





Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI NO. 4

Land division corners are approximately positioned on this map.

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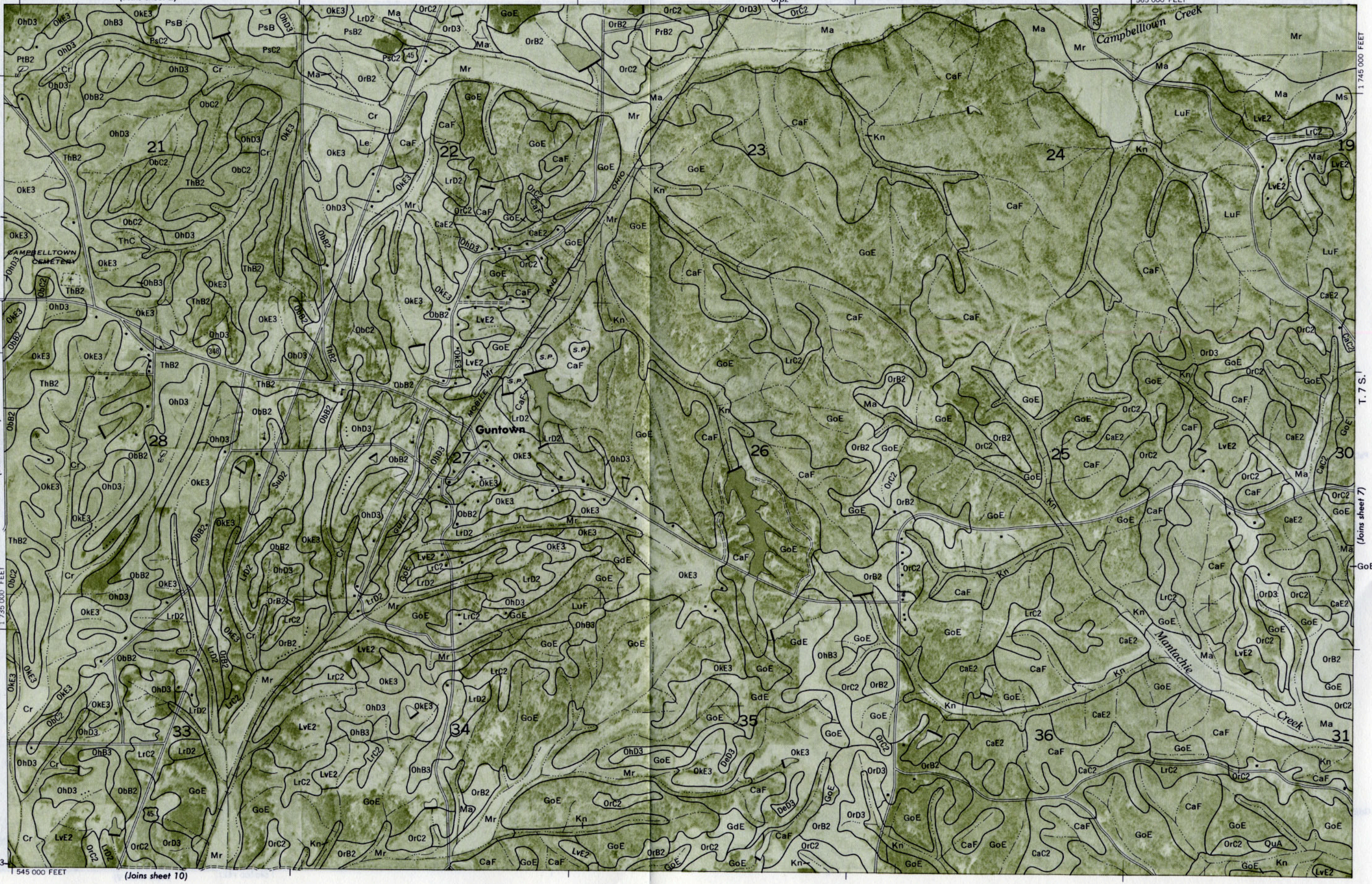
Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 5

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

6

N



Scale 1:20000

1 Mile | ¾ | ½ | ¼ | 0

5000 Feet | 4000 | 3000 | 2000 | 1000 | 0 | 5000

LEE COUNTY, MISSISSIPPI NO. 6

Land division corners are approximately positioned on this map.

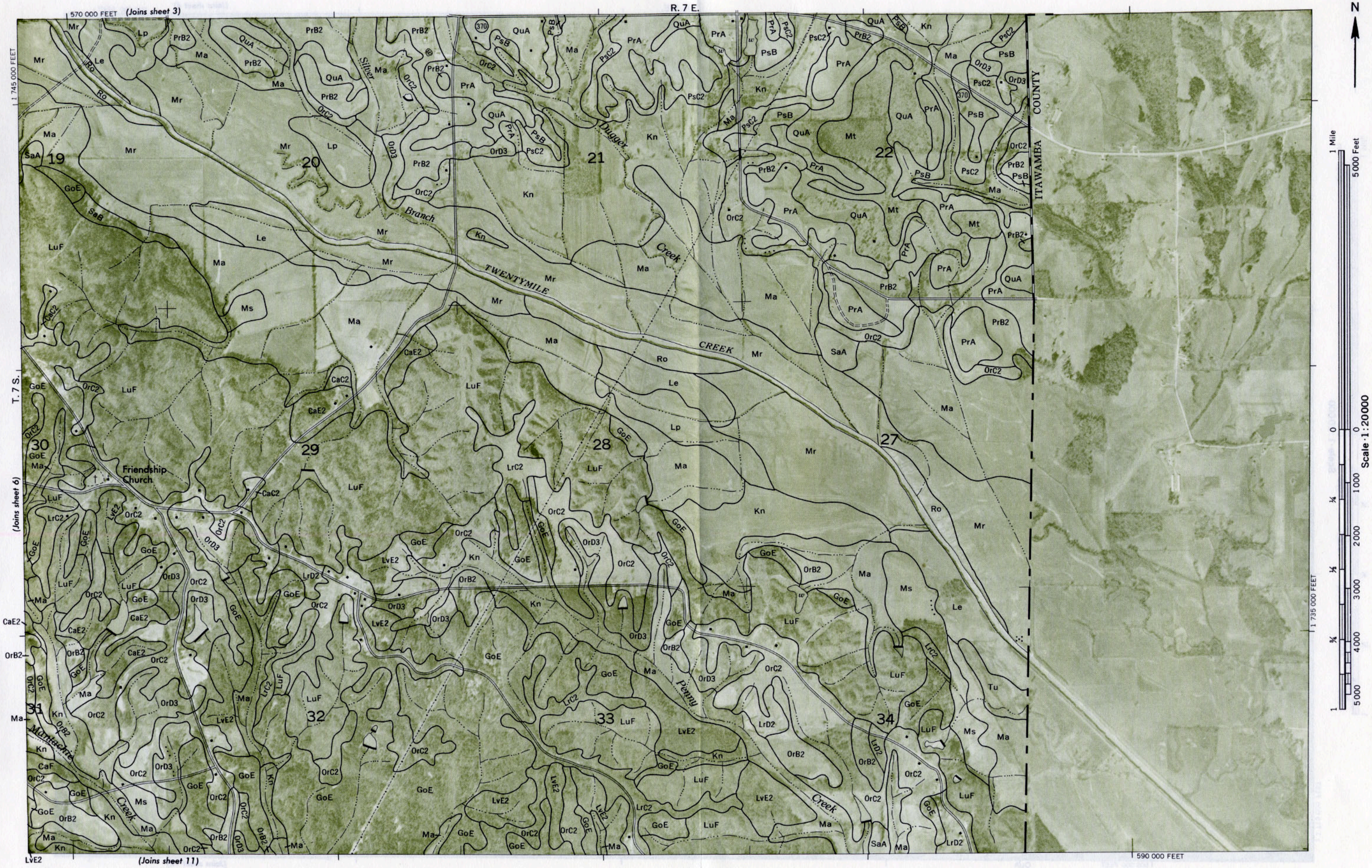
This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.

Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

7

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

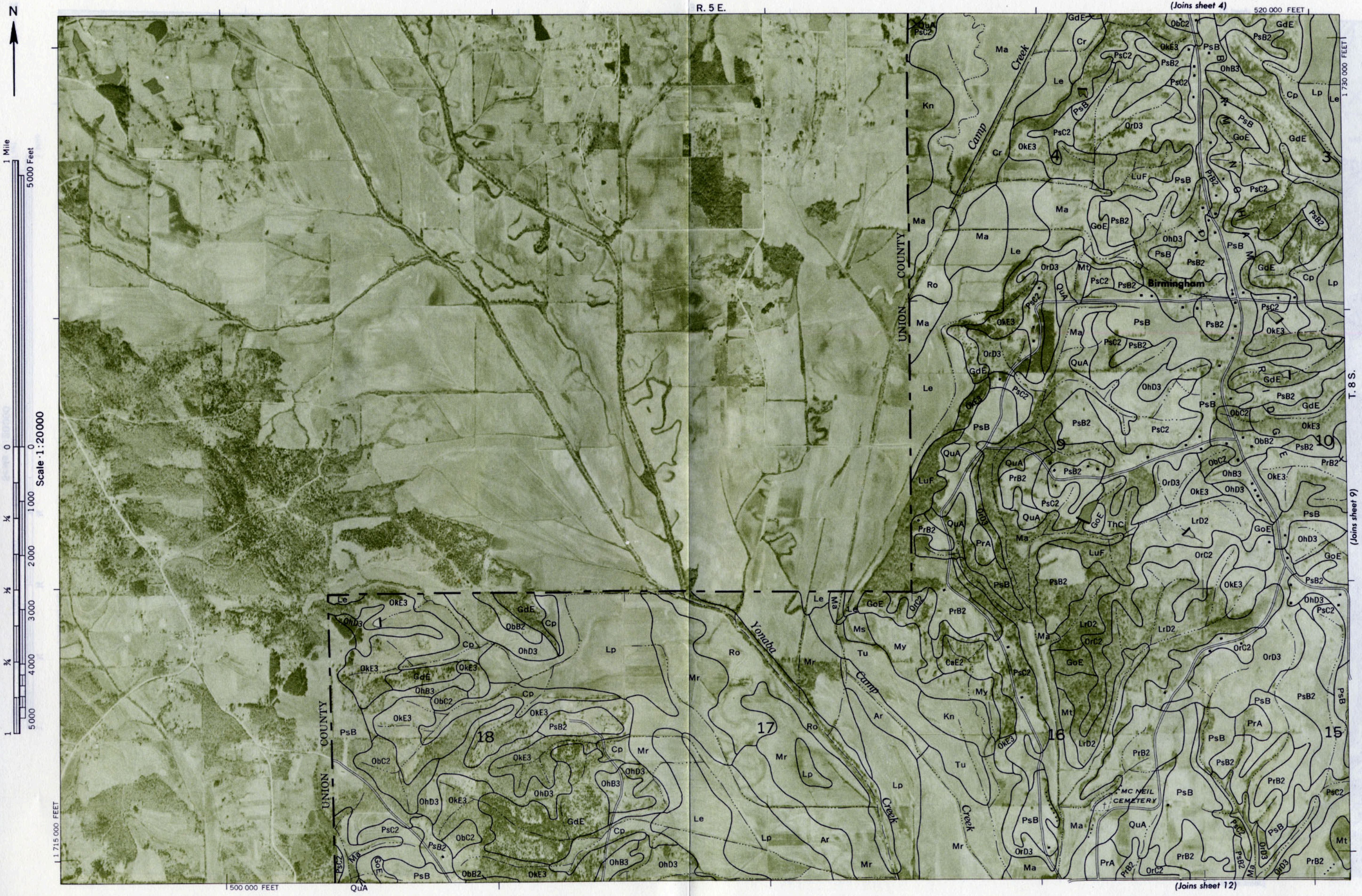
LEE COUNTY, MISSISSIPPI NO. 7



Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

8

LEE COUNTY, MISSISSIPPI — SHEET NUMBER 8



Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum.

LEE COUNTY, MISSISSIPPI NO. 8

Land division corners are approximately positioned on this map.

This map is one of a set compiled in 1970 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Mississippi Agricultural Experiment Station.

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Photobase from 1970 aerial photographs. 5,000-foot grid ticks based on Mississippi plane coordinate system, east zone. 1927 North American datum

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Land division corners are approximately positioned on this map.

LEE COUNTY, MISSISSIPPI NO. 9